PROCEEDINGS
THE 3RD INTERNATIONAL CONFERENCE ON ECONOMICS 2021
MARCHING FORWARD POST COVID-19 FOR A SUSTAINABLE WORLD ECONOMY: LESSONS, ISSUES AND CHALLENGES

27 - 28 OCTOBER 2021
UNIVERSITI MALAYSIA SABAH, KOTA KINABALU

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PREFACE

First of all, we pray and give thanks unto our God Allah SWT, who has given us mercies and blessings to complete this publication of Proceedings of International Conference on Economics 2021 (ICE 2021).

This conference is organized by the Faculty of Business, Economics and Accountancy, UMS in collaboration with the Sabah Institute of Development Studies (IDS) and Sabah Development Economics and Investment Authority (SEDIA).

The aim of this proceeding is to provide references to ICE2021 participants and readers who were not able to attend this conference in 2021. This conference is held once in every 2 years at the Universiti Malaysia Sabah (UMS), Kota Kinabalu, Sabah Malaysia.

ICE 2021 is a venue for researchers, academicians, policy makers and individual participants to present and share findings on their research in business, economics and accountancy.

The theme for ICE 2021 is “Marching Forward Post COVID-19 for a Sustainable World Economy: Lessons, Issues and Challenges”. This theme is timely and in tandem with the world’s economic and business environment today as the world continues to struggle to contain the COVID-19 pandemic that has affected our day-to-day life, businesses, disrupted world trade and economy. Economic and business environment has become more challenging over the years since the pandemic was first reported in late 2019. This conference serves as a platform for researchers, business leaders, and policymakers to discuss how businesses and the economy will continue to move forward post-pandemic.

Over 100 regional and global participants from members of academia, business and government attended ICE 2021. For the first time since ICE was incepted in 2017, the conference is held virtually. These proceedings record the refereed papers presented at the conference. All full-length papers and work-in-progress abstracts were submitted to a double-blind peer-review process. All the submitted papers in the proceedings have been peer reviewed by the reviewers.

We thank all authors, reviewers and participants for their contributions. Hopefully, these proceedings provide benefit to all in various ways to enhance their research in the respective fields.

Thank you.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>NO</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>The Impact of Ecotourism on Community’s Livelihood: A Study on Local Community in Kadamaian, Sabah</strong>&lt;br&gt;Noor Fzlinda Fabeil, Marry Tracy Pawan, Awangku Hassanal Bahar Pengiran Bagul, Kamarul Mizal Marzuki, Mori Kogid &amp; Yuzainy Janin</td>
<td>1-10</td>
</tr>
<tr>
<td>2</td>
<td><strong>An Analysis of Search Strategies for EPC Online Matching Platforms</strong>&lt;br&gt;Yan Shiqiang, Toh Pei Sung, James Alin &amp; Debbra Toria Nipo</td>
<td>11-27</td>
</tr>
<tr>
<td>3</td>
<td><strong>The Impact of Economic Factors on Financial Performance in Malaysia</strong>&lt;br&gt;Wong Vui Ken &amp; Saizal Bin Pinjaman</td>
<td>28-38</td>
</tr>
<tr>
<td>4</td>
<td><strong>The Impact of Macroeconomic Variables on The Economic Performance of Smes in Malaysia: An Analysis of SMEs in Five Major Sectors</strong>&lt;br&gt;Wong Vui Chuen, Salmah Topimin &amp; Saizal Pinjaman</td>
<td>39-50</td>
</tr>
<tr>
<td>5</td>
<td><strong>The Interaction between Gold Price and FTSE KLCI Price in Malaysia</strong>&lt;br&gt;Sook Ching Kok &amp; Quaiser Munir</td>
<td>52-57</td>
</tr>
<tr>
<td>7</td>
<td><strong>Employment of Youth in Malaysia During COVID-19 Pandemic</strong>&lt;br&gt;Eng Keng Seng, Beatrice Lim Fui Yee &amp; Janice Nga Lay Hui</td>
<td>66-72</td>
</tr>
<tr>
<td>8</td>
<td><strong>Peranan Masjid Sebagai Pusat Sehenti Bantuan B40 di Sabah</strong>&lt;br&gt;Siti Hajar Samsu, Dayangku Aslinah Abd. Rahim, Khaiful Hanim Pazim, Roslinah Mahmoud &amp; Lim Fui Yee Beatrice</td>
<td>73-84</td>
</tr>
<tr>
<td>9</td>
<td><strong>The Intention to Use Islamic Banking Products and Perceived Impacts on Financial Inclusion: A Study to Measure Islamic Financial Literacy in Malaysia</strong>&lt;br&gt;Leong Wei Shan, Au Yong Hui Nee &amp; Yap Sook Hui</td>
<td>85-96</td>
</tr>
<tr>
<td>10</td>
<td><strong>An Insight into The Relationship between Human Resource Quality, Risk-Taking Propensity, and Community-Based Ecotourism in The Rural Community</strong>&lt;br&gt;Shamezah Shamsul &amp; Jakaria Dasan</td>
<td>97-107</td>
</tr>
<tr>
<td>11</td>
<td><strong>Macroeconomic Variables and Malaysia House Price Index</strong>&lt;br&gt;Aisyah Binti Zulkifli, Mori Kogid, Saizal Pinjaman &amp; James M. Alin</td>
<td>108-116</td>
</tr>
<tr>
<td>12</td>
<td><strong>National Income Matters Affect on Personal Income Tax Revenue Compliance in Malaysia? An Eviews Approach</strong>&lt;br&gt;Ong Yih Tat, Janice Nga Lay Hui, Andy Lee Chen Hiu</td>
<td>117-127</td>
</tr>
<tr>
<td>13</td>
<td><strong>An Urban Household Living Wage: A Conceptual Overview</strong>&lt;br&gt;Cyreel Ovyenne Onoh &amp; Siti Hajar Samsu</td>
<td>128-140</td>
</tr>
<tr>
<td>14</td>
<td><strong>Income Inequality in Sabah, Malaysia</strong>&lt;br&gt;Adwina Chin Lee Ling &amp; Kelvin Tan Jia Sheng</td>
<td>141-151</td>
</tr>
<tr>
<td>15</td>
<td><strong>Impact of Foreign Direct Investment on Co2 Emission at Different Level of Economic Development: Evidence from Least Square Dummy Variable Corrected</strong>&lt;br&gt;Abdullahi Abubakar, Saifuzzaman Ibrahim, WNW Azman-Saini &amp; Siong Hook Law</td>
<td>152-164</td>
</tr>
<tr>
<td>16</td>
<td><strong>The Factors that Influence the Preparation Towards Retirement Among Gen Y in Malaysia</strong>&lt;br&gt;Logananthiny Kumaraguru &amp; Caroline Geetha</td>
<td>165-183</td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>18</td>
<td>Relationship Between Environmental Regulation and The Volume of Import in OCED Countries</td>
<td>Norazean Binti Rasit &amp; Sarma Imran Aralas</td>
</tr>
<tr>
<td>19</td>
<td>Long-Run Shifts of The Beveridge Curve in Peninsular Malaysia, Sabah, and Sarawak</td>
<td>Marcilla Elmy Girl Malasius, James Alin &amp; Mori Kogid</td>
</tr>
<tr>
<td>20</td>
<td>An Investigation of Economic Growth, Youth Unemployment and Inflation in ASEAN Countries</td>
<td>Yen Vun Fung &amp; Janice L. H. Nga</td>
</tr>
<tr>
<td>21</td>
<td>Empirical Investigation of Twin Deficit Hypothesis: A Systematic Literature Review</td>
<td>Mu Mu Theint &amp; Evan Lau</td>
</tr>
<tr>
<td>22</td>
<td>An Insight of Family Business Exclusive Resources: The Role of Social Capital Resources and Innovativeness in Family Business</td>
<td>Syed Amjad Hussain &amp; Jakaria Dasan</td>
</tr>
<tr>
<td>23</td>
<td>Study On Tourist Satisfaction in Liangshan Prefecture, China</td>
<td>Cai Changyan &amp; Lim Fui Yee Beatrice</td>
</tr>
<tr>
<td>24</td>
<td>Financial Support for Tourism Development in Liangshan Prefecture, China</td>
<td>Cai Changyan &amp; Lim Fui Yee Beatrice</td>
</tr>
<tr>
<td>25</td>
<td>Food Insecurity Among B40 Group and Food Wastage in Malaysia</td>
<td>Suriya Akhter, Santhi Ramanathan &amp; Solarin Sakiru Adebola</td>
</tr>
</tbody>
</table>
THE IMPACT OF ECOTOURISM ON COMMUNITY’S LIVELIHOOD: A STUDY ON LOCAL COMMUNITY IN KADAMAIAN, SABAH

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ABSTRACT

Tourism has been an important alternative strategy for rural development through improving the economies and societies of the rural people. Nevertheless, there is a dearth of study on the impact of tourism development on community’s involvement and their livelihood. This paper explores from the local community’s point of view how tourism contributes as a new livelihood, in terms of changes in household income. Face-to-face structured interviews with 12 local communities from 6 ecotourism sites in Kadamaian, Sabah revealed that the economic status of the local communities interviewed are mainly ‘below than average’ that their income level is below the National Poverty Line Income (PLI). Two-thirds of them agreed there is an increase in their household income after joining the ecotourism-related business, mainly as small business owners, and some are part-time workers or helpers at the ecotourism sites. The findings also found that although respondent perceived ecotourism as important for livelihood, they are still ambivalent that tourism can alleviate poverty, which mainly caused by a lack of entrepreneurial skill. This study lends insights to ecotourism operator and policymakers to provide the local community with relevant capacity building and to ensure total support from other actors in the ecotourism supply chain, like NGOs, universities, volunteers, government, in line with the trickle-down concept of tourism i.e. tourism-led growth strategy (TLG).

Keywords: Ecotourism, rural community, poverty, livelihood

Acknowledgement

This research was funded by the Research Niche Fund of Universiti Malaysia Sabah (SDN0017-2019), entitled Sustainable Tourism Development for Poverty Alleviation. A special thanks to all the participants involved in this study.

1.0 Introduction

Tourism has been an important strategy for rural development through improving the economies and societies of the rural people. The role of tourism in poverty alleviation has been recognised by several international organisations like World Tourism Organisation (WTO) and International Labour Office (ILO) as one of the best income-generating sectors especially for communities in deprived region. In
many developing countries, the incidents of poverty seemed to be somewhat higher in the rural areas as compared to in urban. Rural poverty faces greater restraints than those of the urban poor, not only in terms of having below than average income, but also have limited access to shelter, water, sanitation, health, education, and social security (Mthembu & Mutambara, 2018; Wang, et al, 2021). In Malaysia, it is found that some remote areas are still inclined towards poverty, especially the states with a larger rural population like Sabah, Sarawak, and Kelantan. The Department of Statistics, Malaysia (2019) reported that people in the rural area achieved a small increase in average household income from 2014 to 2019, about 3% to 9%, as compared to overall Malaysia's gross household income which increased by 12% to 14%. In Sabah, for example, almost two-third of districts have monthly household gross income below the rural poverty line income of RM 3,828.00, including Semporna, Beluran, Ranau, Kota Belud, Kudat, Kota Marudu, Pitas, Kuala Penyu and Tongod (Figure 1). These statistics lend insights that an ‘aided’ economic development model (Ritter & Lettl, 2018), i.e. the support from the government or non-government agencies in relating to income-generating activities is important and relevant for the livelihood of the lower-income group in the rural area.

In many developing countries, the formulation and implementation of policies or program for poverty eradication has been employed through developing quality infrastructure (Nair & Sagaran, 2015), employing the concept of endogenous growth theory (Kelliher, et al, 2018) and adopting community participatory approach (Oakley & Clegg, 1999; Chambers, 1997). These approaches underlie the development of rural tourism activities in many developing countries through the use of several models to analyse the impact of tourism to the economy and community, for example, Integrated Rural Tourism (Saxena, et. al., 2007), Computable General Equilibrium (CGE) Model (Blake, Arbache, Sinclair & Teles, 2008) and Multi-Industries Integration Network (Feng, et. al., 2018). In addition, the significant impact of tourism has been deliberately discussed by many scholars as an engine of growth to assist poor community in reducing poverty. The impact of tourism to local community has been measured through changes in household income (e.g., Kim, Xie & Cirella, 2019), quality of life (Adnan & Mamat, 2018), and infrastructure (e.g., Perumal, et al, 2016; Isaac & Wuleka, 2012). Notwithstanding, the impact of tourism on poverty alleviation has been argued in the literature between two strands, namely, (i) whether there is a direct empirical link between tourism and poverty reduction, and (ii) the possibility of tourism to attain growth-oriented benefits that will be trickled down to the poor. In addition, there is still lack of detailed study from the local community point of view, in terms of their livelihood change, i.e., in what way tourism provides a better living, including the changes in household income, development of business start-up, or other income generating activities.
Therefore, this study emphasises on the impact of ecotourism activities to community livelihood in Kadamaian, Kota Belud, Sabah by investigating the types of income-generating activities engaged by local community and their level of household income gained from the activities. Kadamaian is located in the Kota Belud district, 75 km from Kota Kinabalu, rich with its natural ecology, e.g., rivers, waterfalls, hills and forest (Figure 1). Kadamaian tourism has been empowered by KATA (Kadamaian Tourism Association) which was established since 2015 and started receiving visitors in 2017 with about 80,000 arrivals including the local and foreign tourist, independent travellers and with family.

Figure 1. Map of Kadamaian, Sabah

2.0 Literature Review

2.1 Ecotourism in Malaysia

Ecotourism is one of the tourism products that are potential to contribute to the socio-economic development in Malaysia. The Ministry of Tourism Malaysia reported that more than 20 percent of tourist arrivals in Malaysia is classified as ‘eco-tourist’ who chose to visit diversity of natural life and human culture. Ecotourism encompasses nature-oriented tourism activities through education and exploration. The essence of ecotourism development includes nature conservation and preservation, education, and research, as well as local economic sustainability (Kim, Xie & Cirella, 2019; Zaid & Azim, 2020). Ecotourism development is seen as a plausible means to improve livelihood and household income through diversification of income-generating activities and employment opportunities. In Malaysia, the development of ecotourism was first aspired by the government through the National Ecotourism Plan in 1996 and the implementation policy under the Malaysia Tourism Transformational Plan towards 2020, Ministry of Tourism and Culture. The increasing trend of tourist visitation towards nature and outdoor recreation has significantly contributed to the development of tourism-related business among the local communities and able to diversify their livelihood activities by participating in producing native products (Wuleka, et. al., 2012). Likewise in Malaysia, the ecotourism business has led to the creation of new micro businesses among the rural community including tour operators, home stay operators, native-product makers, and business development trainer. In 2019, a total of 3.4 million job opportunities were offered under the tourism industry which recorded an increase of more than double employment opportunities in 10 years.

2.2 Ecotourism as a Source for Livelihood

Ecotourism has been reported by many scholars as a sustainable measure of livelihood sustenance especially in rural areas. Livelihood is defined as source of income (Xue & Kerstetter, 2019) and in Malaysia, livelihood has been generally benchmarked by National Poverty Line Income (PLI) based on
the basic requirements for a household to live healthy and actively (Department of Statistics Malaysia, 2019). Previous studies have found that ecotourism development can contribute to the economic upliftment of rural communities (Kim, Xie & Cirella, 2019; Perumal, Sakawi & Zamhari, 2016; Adnan & Mamat, 2018). The involvement of communities in ecotourism activities either directly or indirectly, can possibly increase household income through new business start-up, like retail, food products, accommodation, and transportation services. According to Ashley and Mithcell (2009), direct involvement of community in tourism is when people provide goods and services to tourists, for example by working in a hotel or restaurant, offering accommodation services in their homestay, become a boat rider or driver for tourist, or as receptionist for tourist in their village. Indirect involvement of community in tourism activities is when people work in sectors supplying tourism business, for examples grow and sell vegetables or local fruits and served to hotels or restaurants, or work for the construction or equipping the hotels or restaurants.

The development of downstream business from ecotourism activities also contribute to new alternative income-generating activities to the communities, for examples transportation services, shop assistants, photography, and tour guides. The development of ecotourism also has possibility to enhance the local economy through the active cooperation and involvement of households (i.e., youth and women) in tourism-related business (Narwan & Mulia, 2019; Scheyvens, 2000). Previous studies have found that the ecotourism sector has the potential to empower women in a community through decision-making autonomy in resource mobility and family finance (Narwan & Mulia, 2019; Adnan & Mamat, 2018). Kim, Xie and Cirella (2019) in their study on the impact of ecotourism on rural communities in Cambodia found that the household income for women-headed families who participate in ecotourism activities was higher than household income of other families who were not engaged in the ecotourism activities.

Ecotourism has not only provided financial benefits to the community, but also brings positive changes in terms of the well-being of rural communities. Studies have found that environmental sustainability contributes to improving the quality of life of local communities, especially in terms of emotions and self-confidence, thus forming a positive image of the communities (Zaid & Azim, 2020). Ecotourism development has the potential to improve the quality of life of communities through capabilities and skills development in the field of tourism-based business (Adnan & Mamat, 2018; Lo, Choy & Mohamad, 2018). Through ecotourism activities, the knowledge and skills of the rural communities including communication skills, project management skills and financial management skills, can be possibly improved through active community involvement in ecotourism activities. Besides, ecotourism allows optimal management of resources through preservation and conservation of land and natural resources. The agriculture and fisheries activities can be undertaken more actively as part of ecotourism activities and encourage the sale of local agriculture-based products by the local communities. In addition, the cooperation of various stakeholders in ecotourism development including the local communities, tourism operators, government agencies and non-government agencies has a positive impact on rural infrastructure development (Perumal, et al, 2016; Isaac & Wuleka, 2012).

Ecotourism has been deliberately discussed in previous literature as a means for economic growth within rural communities, acknowledging on the potential socio-economic benefits that it can generate. Nevertheless, it is contended by some scholars that many ecotourism projects reveal insignificant change in the livelihood of the local communities, which they argued that it only brings modest improvement to rural community livelihood (Kiss, 2004; Scheyvens, 1999). Therefore, this study aims to explore from the local community’s point of view how ecotourism contributes as an alternative livelihood, by exploring the types of alternative income-generating activities and changes in household income of local people who have participated in ecotourism activities.

3.0 Data and Method

This study is a part of a larger research project of a sustainable rural tourism development, that is funded by a research grant from the Universiti Malaysia Sabah. This study was carried out with twelve local people located in six villages in Kadamaian, Kota Belud, Sabah. These villages were purposively
chosen for two main reasons, firstly, it is the popular site for ecotourism in Kota Belud, Sabah, and secondly, it has been empowered by the Kadamaian Tourism Association (KATA) since 2015 as the main strategic tool for livelihood and conservation of the area with the mission to become world-class ecotourism destination by 2025. Purposive sampling allows convenience and more objectivity rather than excessive information to explain the phenomenon under investigation (Blaikie & Priest, 2017; Bell, Bryman & Harley 2019). The fieldwork was started with reconnaissance visits to the ecotourism sites in several villages in Kadamaian to get some general information on the participation of local people in tourism activities in the area. Following the visits, face-to-face structured interviews with the local people were conducted in the different villages, which snowball sampling was employed to select the participants for interview.

Respondents targeted for this study were those directly (work as the full-time or part-time worker at the ecotourism sites) or indirectly involved (small business owner supplying goods and services to ecotourism sites) in the area. Structured questionnaire was used to gather information on the impact of ecotourism on the livelihood of the local people in the area. The questionnaire included the dichotomous questions on socio-economic characteristics of the respondents (i.e., age, gender, education level and main source of income) and the involvement of respondents in tourism activities (i.e., types of job or business). In addition, the 5-point Likert scale of attitudinal responses (from 1=extremely negative to 5=highly positive) were also used to gather the perception of respondents on the impact of tourism activities to their livelihood. Data were encoded into Microsoft Excel and analysed using the descriptive analysis, including the frequency and percentages of responses to explore the impact of ecotourism on livelihood of the local communities in Kadamaian, Kota Belud, Sabah. Open-ended questions were used to gather opinion from the participants about their experience in ecotourism activities. All responses were summarised into a composite diagram.

4.0 Results

3.1 Respondents’ Profile

This study involved small scale interviews with 12 respondents who are the local people involve in tourism activities in Kadamaian (Table 1). Most of the respondents were from Dusun ethnic, nine of them were females and mainly were middle aged between 41 to 50 years (Table 2). As for level of education, it was found that most of the respondents had finished secondary school. In terms of average size of family, most of the respondents had 4 to 5 persons in a family, and 9 out of 12 respondents mentioned they have household income of RM 1,500 and below every month. With regard to the main occupation of the respondents, it was found that they were mostly part-timer workers (or do odd jobs), farmers and small business operator. This profile data lends insight about the socio-economic background of the respondents, especially on their livelihood which can be considered as poor, when their monthly household income is below than average household income based on the national poverty line income (PLI) of RM 2,208 (Department of Statistics Malaysia, 2019).

<table>
<thead>
<tr>
<th>Village Name</th>
<th>Total Population</th>
<th>Ecotourism Sites</th>
<th>Sample (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kampung Sayap</td>
<td>1,627</td>
<td>Pusat Kraftangan &amp; Botung-Botung Homestay</td>
<td>2</td>
</tr>
<tr>
<td>Kampung Lingkubang</td>
<td>429</td>
<td>Tagal, Kampung Lingkubang</td>
<td>2</td>
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<tr>
<td>Kampung Talungan</td>
<td>355</td>
<td>Ekopelancongan Kampung Talungan</td>
<td>3</td>
</tr>
<tr>
<td>Kampung Takulung</td>
<td>356</td>
<td>Tagal Pelancongan Kampung Takulung</td>
<td>2</td>
</tr>
<tr>
<td>Kampung Tiong</td>
<td>Melangkap</td>
<td>Ekopelancongan Melangkap Tiong</td>
<td>2</td>
</tr>
<tr>
<td>Kampung Baru</td>
<td>Melangkap</td>
<td>Polumpong Melangkap View Camp Site</td>
<td>1</td>
</tr>
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Table 2: Socio-economic Profile of the Respondents (n=12)

<table>
<thead>
<tr>
<th>Socio-economic Profile</th>
<th>n</th>
<th>Socio-economic Profile</th>
<th>n</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
<td>Family size</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
<td>3 and less</td>
<td>2</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>4 to 5 persons</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 and more</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>Main source of income</td>
<td></td>
</tr>
<tr>
<td>30 and below</td>
<td>1</td>
<td>Part-time helper/odd jobs</td>
<td>6</td>
</tr>
<tr>
<td>31 to 40</td>
<td>3</td>
<td>Farming</td>
<td>2</td>
</tr>
<tr>
<td>41 to 50</td>
<td>7</td>
<td>Own business</td>
<td>2</td>
</tr>
<tr>
<td>51 and above</td>
<td>1</td>
<td>Work in a private company</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Government servant</td>
<td>1</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td>Monthly Income</td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
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<td>RM 1,500 and below</td>
<td>9</td>
</tr>
<tr>
<td>Secondary school</td>
<td>9</td>
<td>RM 1,501 to RM 2,000</td>
<td>1</td>
</tr>
<tr>
<td>Tertiary/College/University</td>
<td>1</td>
<td>RM 2,001 and above</td>
<td>2</td>
</tr>
</tbody>
</table>

3.2 The Impact of Ecotourism on Community Livelihood

Based on the interview, some respondents mentioned they either directly or indirectly involve in ecotourism business activities in their village. Figure 2 indicates that more than half of the respondents in this study (55 percent) involved as part-time workers at the tourism site, i.e. some of them work as a cleaner, care-taker at the ecotourism location or as a cook or café assistant. Meanwhile a quarter of them involve in tourism activities as full-time worker as guest registration staff, guard man, tour guide and field coordinator. Only few of them take up own business like selling local souvenirs, operating a restaurant, homestay, and rental business.

In relating to income received by respondents from ecotourism activities in their area, Table 3 shows 7 out of 12 respondents receive monthly income of RM 500 and below, in which most of them are part-time helpers in the ecotourism site. Four of them receive income between RM 501 to RM 1,000 as full-time workers.
time workers in the ecotourism business in their area. It is also found that those who operate a services or retail business for tourist or visitors enjoy more income compared to waged workers.

Table 3: Income received by Respondents from Ecotourism Activities (n=12)

<table>
<thead>
<tr>
<th>Monthly income</th>
<th>n</th>
<th>Source of income</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM 500 and below</td>
<td>7</td>
<td>Monthly wage as part-time helpers in ecotourism site</td>
</tr>
<tr>
<td>RM 501 to RM 1,000</td>
<td>3</td>
<td>Monthly wage as full-time workers in ecotourism site</td>
</tr>
<tr>
<td>More than RM 1,000</td>
<td>2</td>
<td>Homestay owner, small retail shop</td>
</tr>
</tbody>
</table>

The results portray that although the income received by the local people from the ecotourism business is trivial, the impact of tourism to community can be possibly significant in the long run as a means to provide alternative income to the poor through employment and business opportunities. Many previous studies suggests that in order to provide significant impact to community livelihood, it is possible for ecotourism business operator to encourage active participation among local people to involve in downstream businesses for example the sale of native craft, traditional food and other culturally acceptable products (e.g., Kunjuraman, 2021; Ranjith, 2021).

3.3 Community Perception of the Benefits and Importance of Ecotourism

In exploring further of what way ecotourism activities can benefits the community, the respondents were asked to indicate their opinion on the possibility of ecotourism as a means to improve household income, quality of life, and to reduce poverty. Quality of life in this study is measured based on the work of Zaid and Azim (2020), i.e., the improvement in the standard of living in terms of emotions (e.g., self-confidence, happiness and comfort) that develop positive image in communities. Interestingly, most of them viewed their involvement in ecotourism activities can improve household income, though some of them are quite ambivalent that ecotourism can improve quality of life and alleviate poverty (Figure 3). This result provides insight that a more sustainable approach is needed in developing a responsible tourism which has been advocated by many scholars to ensure active cooperation and support of local communities for dynamic socio-economic linkages (Kim, Xie & Cirella, 2019; Ranjith, 2021).

Figure 3: The Benefits and Importance of Ecotourism to Community Livelihood (n=12)

The results of open-ended question on what hinders respondents from actively participate in tourism activities indicates that although they perceived tourism as important to local community livelihood, they are still ambivalent that tourism can alleviate poverty, which mainly caused by lack of knowledge in business and interpersonal skill, lack of self-confidence and too rely on cooperative, government and village head as well as lack of access to information and support that the community is unclear about
the role of cooperative, the government agencies and the tourism operator in supporting the active participation of community in tourism activities (Figure 4). This result is parallel to Kunjuraman (2021) who discovered that local communities’ challenges in ecotourism development is influenced by a two-fold factor – the internal and external challenges.

Figure 4: Perceived Challenges to Community Participation in Ecotourism Activities (n=12)

5.0 Conclusion

Ecotourism has been increasingly studied in terms of its potential for livelihood enhancement. Many previous studies have evidently found ecotourism contributed benefits to the local community in terms of economic, social, and environmental aspects. However, the crucial challenges faced by ecotourism as a means to community livelihood is to ensure their active participation in ecotourism activities. This exploratory study allows local communities to share their experience and view on the changes in livelihood and the challenges faced by them to actively participate in ecotourism activities in their area. The study discovered that the economic status of the local communities interviewed are mainly ‘below than average’ that their income level is below the National Poverty Line Income (PLI). Two-thirds of them agreed there is an increase in their household income after joining the ecotourism-related business, mainly as small business owners, and some are part-time workers or helpers at the ecotourism sites. Similar findings can be found in previous studies which showed that ecotourism has helped the local communities to diversify their livelihood, whether as regular or seasonal income-generating activities, through both cooperative and individual businesses like restaurants, homestays, food stalls, native handicraft and rental services (e.g., Wuleka, et al., 2012; Tao, 2016; Kunjuraman, 2021). The findings also found that although respondent perceived ecotourism as important for livelihood, they are still ambivalent that tourism can alleviate poverty, which mainly caused by a lack of business and entrepreneurial skill. This study lends insights to ecotourism operator and policymakers to provide the local community with relevant capacity building and to ensure total support from other actors in the ecotourism supply chain, like NGOs, universities, volunteers, government, in line with the trickle-down concept of tourism, i.e., tourism-led growth strategy (TLG). In addition, to ensure the plausible impact of ecotourism to community livelihood, the concept of integrated ecosystem is seen as a strategic approach to support the trickle-down effect of ecotourism to community. This integrated ecosystem concept as suggested by many scholars (e.g. Feng, et al., 2018; Saxena & Ilbery, 2007) consists of an integrated network of stakeholders in the ecotourism supply chain including the supply services (natural resources), the regulatory services (guidelines and laws), the support services (basic facilities and amenities) and the cultural services (religion, heritage, history). Finally, this study looks at the impact of ecotourism activities based on small-scale exploratory study, which involved only twelve local people in selected villages, thus the results might not be adequate to make general inferences for larger
population. Notwithstanding, the findings provide a preliminary insight on the alternative income-generating activities of local communities who have been engaged in ecotourism in Kadamaian. Suggestions for future research involving extensive questionnaire surveys and larger population are put forward.

References


AN ANALYSIS OF SEARCH STRATEGIES FOR EPC ONLINE MATCHING PLATFORMS

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ABSTRACT

Abstract: Energy Performance Contracting (EPC) is a mechanism which is widely used in energy conservation project. The low matching efficiency between ESCO and EU limits the performance of the EPC market which is an urgent problem. Solving this problem can significantly improve the efficiency of energy saving industry. It is of great significance to environmental protection. Online matching platforms can significantly improve the search efficiency in the matching process which is important in improving the performance of EPC market. This paper analysis the interplay between ESCO, EU and the online matching platform, using game theoretic models. We examine whether the online matching platform should target both H-type and L-type match-seekers or an exclusive H-type match-seekers group and how the platform should price the search services. Our research provides meaningful insights for online matching platform about the relationship between the matching effectiveness and search fee, guidelines for the pricing and positioning search service. Furthermore, we find that the price of platforms for search service can impact the decisions of each match-seekers which in turn affect the performance of the hole EPC market. Results from this study provide basic guides to develop EPC online matching platform.

Keywords: EPC, Game theory, online matching platform, match-seeker, search fee.

1. Introduction

The energy saving industry is developing rapidly in China. And EPC is playing an increasingly important role in the reforms of energy-saving and emission-reduction. In 2018, China’s energy consumption per 10,000 yuan of GDP is 0.56 ton of standard carbon(National Bureau of Statistics of China,2020). To meet the object of carbon emission peak in 2030, China must promote energy-saving and emission-reduction reforms on a large scale. As a result the energy-saving service industry of China is developing rapidly. The output value of China’s energy-saving service industry reached 522.2 billion yuan in 2019 (China Energy Information Platform,2020). The year-on-year growth of energy-saving service industry is 9.38%. EPC plays an important role in China’s energy conservation and emission...
reduction business. As a performance-based mechanism that improves energy efficiency of companies (Zhou et al., 2017), it is widely used in industry sectors, residential electricity, school and shopping mall, etc.

Energy Performance Contracting EPC (also known as “Energy Management Contracting”) is a performance-based mechanism that helps finance and install proven energy-efficient technologies to improve energy efficiency of companies (Zhou et al., 2017). Under an energy performance contract, the energy service company (ESCO) and the energy user (EU) cooperate with each other to achieve energy saving performance. Energy service company (ESCO) is a consulting service company who offers energy-saving services to its client, including energy audit, project financing, project designing, purchasing materials and plants, construction, energy accounting, etc. The ESCO brings back its investment and earns a reasonable profit by sharing the energy-saving benefits with its client (Vine, 2005). The client (EU) in EPC is a company with low energy-saving technology who needs to improve energy efficiency with the help of ESCO. They range from the building sector such as schools and shopping malls to the industry sector such as paper mills and steel plants. (Zhou et al., 2017) Under the mechanism of EPC, the client set the energy-saving goal and determine ESCO through bidding. Then the ESCO provides four types of services: (i) Turnkey Service—The ESCO provides all the services required to design and implement a comprehensive project at the client facility, from the initial energy audit through long-term monitoring and verification (M&V) of project savings. (ii) Comprehensive Measures—The ESCO tailors a comprehensive set of measures to fit the needs of a particular facility. (iii) Project financing—The ESCO arranges for long-term project financing. (iv) Project Savings Guarantee—The ESCO provides a guarantee that the savings produced by the project will be sufficient to cover the cost of project financing for the life of the project. (Zhou et al., 2017). After the EPC project is put into use, the ESCO makes profits by sharing the savings of energy.

Energy saving services are widely distributed in industry, construction, transportation, residents, commerce, government and other public institutions in China (China Energy Information Platform, 2020). In sharp contrast with the rapid development of the energy service industry, the growth of energy conservation service companies is relatively slow. As of 2020, there are only 6551 energy service companies in China. They are mainly concentrated in the eastern region (China Energy Information Platform, 2020). The number of ESCO is even less. But the clients of EPC are widely distributed across the country and multiple industries. So how to improve matching efficiency of ESCO and EU is an urgent problem to be solved.

Online matching platform is widely used in various business cooperation which enables companies to find the optimal business partner from a larger market which is far beyond the local markets. It breaks through the geographical and industrial barriers between the ESCO and its client and solves the problem of matching between ESCO and EU. The study about EPC online matching platform includes the technological issues about online matching platform, the behavior problem of match-seekers and the operation strategy of online matching platform. Research about the relationship between the matching action of match-seekers and search fee of EPC online matching platform play a foundational role in the operation strategy study of online matching platform. The purpose of this paper is to study the necessity, feasibility and pricing strategy of search services for ESCO and EU of EPC online matching platform. In order to achieve this goal, we examine the matching strategy selection of match-seekers, the target customers selection and pricing strategy of the online platform in different value differences between matching parties. The research results of this paper guidelines for the pricing and positioning search service.

Amit Basu et al systematically studied the search and authentication strategies for online matching platforms. Their research results are of great significance to enrich the economic explanation of matching in a vertically differentiated online market. Their study provides important theoretical support for this paper.
Due to the unique profit distribution method of EPC, the online platform of EPC is different from ordinary online matching platforms in terms of the benefits of participants. The utility of match-seeker is determined by both parties in the EPC project while the utility of match-seeker is determined by the matching object in ordinary online matching platform. This work contributes to the literature of EPC and online matching platform. It studies the matching problem between the ESCO and EU in EPC from the perspective of game theory which is relatively unpopular but has practical significance.

2. Relevant Literature

This study is based on comprehensive literature, ranging from bilateral search markets to online matching and EPC processes. There are two main streams in bilateral search markets research. The first one is the research on bilateral search markets itself. This stream of literature has focused on four topics. The first is search friction. Time discounting and exogenous are used to describe search friction (Shneyerov, Artyom; Wong, Adam C. L. 2020). The second is adverse selection in bilateral search market (Auster and Gottardi 2019). The third is learning which is introduced in pricing in a search market (Chatterjee, Kalyan; Das, Kaustav, 2017). The fourth is private valuations over a multi-product seller inventory in bilateral search market (Hidir, Sinem, Vellodi, Nikhil, 2021). The second stream is using bilateral search market as a research scene or perspective to study other issues. Bilateral search market is widely used in improving the algorithms for bidding strategy (Shivaie, Mojtaba; Kiani-Moghaddam, Mohammad; Weinsier, Philip D. 2021) and studying the congestion control in power system (Sharma, Akanksha; Jain, Sanjay K. 2019).

“Matching” means two-sided nature of interchange between two match-seekers in a bilateral market (Adachi 2003). In bilateral search markets, search is successful when a mutually acceptable match is found from two disjoint sets of match-seekers (Roth and Sotomayor 1992). In a matching process, each match-seekers hope to get the most benefit in match. But the benefit match-seekers get from matching is not the platform or intermediary’s prime concern. Usually, the intermediary and platform’s interest depend on the probability of successful matching between the two match-seekers. So, they will invest in improving the search and matching technology to increase the probability of successful matching. The study of Damiano and Li (2007) shows that intermediary’s revenue maximization will determine the match-seekers selective behavior. McNamara and Collins (1990), Chade (2001) and Smith (2006) found that sometimes match-seekers would like to match with only those belonging to the same class. They called this phenomenon “perfect segregation” or “elitist equilibrium”, so each match-seeker can choose to match with those belonging to his class or match with everyone he meets. The first option can be named “exclusive” while the second one can be called “inclusive”. For a low type (L-type) match-seekers choose to be exclusive means to reject matching with high type (H-type) match-seekers. It contradicts the principle of pursuing the maximization of profits. So only high type match seekers can choose to be exclusive. The online searching platform can significantly improve the efficiency of matching process. And by setting searching fees, the platform can determine whether both types using the platform or only the H-type using the platform which in turns affects the distribution of H-type and L-type match-seekers.

EPC is a research field of global concern. The research topics scholars focus on includes the operation of EPC, the mechanisms design for improving the efficiency of EPC projects, the influence of stakeholders on EPC projects and the risk management of EPC projects. There are six research gaps between these research topics. The first one is improving the effectiveness of measurement and verification of energy savings. The second one lacks study on EPC implementations in civil engineering. The third one lacks applicable system for ensuring the effect of post EPC energy-saving. The fourth one is limitation on research of sustainable cooperation among stakeholders of EPC project. The fifth one is how to improve the relationship between EU and ESCO and resistance of EPC project. The sixth one is limited study on risk control mechanism in EPC projects. (Wenjie Zhang and Hongping Yuan, 2019). From the aforementioned research status we can summary that the main line of EPC research is improving the performance and success rate of EPC project.
In conclusion, there are two approaches that match-seekers can choose, (a) exclusive search. Where the match-seekers only match with others who belong to the same types, and (b) inclusive search, where the match-seekers would like to match with anyone they meet. While the online matching platform can significantly improve the search process and affect the matching of match-seekers through price adjustments. This paper enriches the literature of matching in EPC by examine the match-seekers’ selection and pricing strategy of the platform in search and matching.

3. Model Description

The EU and ESCO searches the firms to cooperate with, in the preparatory phase of an EPC project. Their interaction constitutes a matching process. In order to cooperate with the best ESCO, EU tries to contact with ESCO as much as possible for selecting the best collaborator to match with. So are the ESCOs. Therefore, the probability of each match-seeker detecting and contacting with another determines the efficiency of search process. In an ideal state, each match-seeker (EU/ESCO) can search all the other candidate. Via internet technology, the online search platform collects all match-seekers’ information and shows it to each match-seeker searching online. The search fees charged by the online matching platform is p. We can assume that the platform retrieval has reached the ideal state. But in direct market, the efficiency of retrieval will be reduced due to the constraints of time, cost and distance. We assume the efficiency of the search process in direct market is μ(0 < μ < 1). Note that we do not consider the possibility of simultaneously searching both directly and online and associated additional costs. Doing so would result in a more complicated model, without significant qualitative or directional changes to our key results (Bloch and Ryder 2000). As a result, the online and offline distribution of match-seekers are key factor affecting the match-seeker’s decision in choosing search platform. When the ESCO and EU encounters, their information such as technical capabilities and performance will be obtained by each other. They will be rated as high type or low type according to specific rules. We introduce the parameter α(0 < α < 1) to represent the proportion of high type in the whole population. After negotiation the EU and ESCO accept each other and agree to cooperate with each other, the match is successful. The process of searching, negotiation and matching may be repeated many times. For simplifying calculation and facilitating analysis, we assume that each matching process includes two periods. If a match-seek fail to match in the first period, it will move to the second period, where they must complete the match. For a match-seeker, the sooner he completes the match, the better. So the value obtained by completing the match in the second period is lower than the first period. To account for the value reduction, we introduce a reduction factor δ (0 < δ < 1) to represent the ration of the value of the second stage to value of the first stage. The probability of matching with an H-type is μα, and the probability of matching with an L-type is μ(1-α) for any match-seeker. The performance of EPC which can not be transferred is realized by the cooperation of EU and ESCO. Mistakes by EU or ESCO will reduce the level of achievement of EPC performance. The high type match-seeker (EU/ESCO) who makes fewer mistakes are conductive to the realization of EPC performance. So, we assume the performance of EPC in ideal state is ν. The performance reduction factor of high type is 1. The performance reduction factor of low type is σ (0 < σ < 1). Therefore the high type match-seeker is preferred by all match-seekers. Due to the unique method of performance realization in EPC project, the utilities are nontransferable. As mentioned above H-type can choose to be inclusive or exclusive in matching, while the L-type can only choose inclusive. For a H-type choosing to be exclusive means accepts matches with H-types only, while choosing to be exclusive means accepts a match of either type.(Amit et al., 2019). Because of the limited number of H-type, the probability of matching success when being exclusive is lower than being inclusive.

Many accidents will lead to failure of cooperation. It will lead to multiple results in the matching game. To simplify the game process, focus on the research of the matching process, we assume that each match-seeker has fulfilled rational expectation for matching. It means that all match-seekers make choice of search mode based on rational expectations regarding the distribution of different type. In equilibrium, their rational expectations are fulfilled and all match-seekers expected to participate indeed participate (Amit et al., 2019).
In each matching process, every match-seeker knows the basic matching information including $\sigma, \alpha, \delta, \mu, \nu$ and $p$. They have to decide whether to use the online matching platform on match in the direct market. The online matching platform need to make a decision which is the market segments it should target. The flow chart is shown in Figure 1.

4. Discussion

4.1 Direct Search

Direct search is a relative simple setting in which every match-seeker search in direct market. If a $H$-type encounters a $L$-type in period one, it has two choices. The first one is to be inclusive and match with the $L$-type, the value would be $\sigma \nu$. The second one is to be exclusive and abandon matching in the first period and move on to the second period. In order to achieve matching, the $H$-type must accept the match in the terminal period, regardless of whether the matching object is $H$-type or $L$-type. The expect value in the second period is $\delta \mu (\alpha \nu + (1 - \alpha) \sigma \nu)$.

Proposition 1. In direct search, there exists $\sigma$ threshold $\sigma$ such that the following occurs:

(i) When $\sigma > \sigma$, $H$-types prefer to be exclusive and $L$-types prefer to wait until the second period. Otherwise, both types prefer to be inclusive.

(ii) The threshold $\sigma$ is increasing in $\mu, \alpha, \text{and} \delta$. 

Figure 1. Flow Chart Of Matching Process
The decision of H-type to be exclusive or inclusive in period one depends on the performance reduction factor of low type \( \sigma \). When the performance reduction of L-type is lower than a threshold, to be exclusive is the optimal choice for H-type. The threshold of \( \sigma \) is affected by the proportion of H-type \( \alpha \), the search efficiency \( \mu \) and the patient of match-seeker \( \delta \). With the increase of the above parameters’ value, the threshold of \( \sigma \) is increasing too. H-type acceptance of L-type drops significantly. The model calculation result display that when H-type choose to be exclusive, it is optimal for the L-type to wait until the second period.

To compare with matching on the online matching platform the value functions were defined as follows:

When H-type is exclusive:

\[
V_{dd}^H = \mu \alpha v + \delta (1 - \mu) \mu (\alpha v + (1 - \alpha) \sigma v) \\
V_{dl}^H = \delta \mu (\alpha \sigma v + (1 - \alpha) \sigma^2 v)
\]

When the H-type is inclusive:

\[
V_{dd}^{dl} = \mu (\alpha v + (1 - \alpha) \sigma v) + \delta \mu (1 - \mu) (\alpha v + (1 - \alpha) \sigma v) \\
V_{dl}^{dl} = \mu \alpha \sigma v + \mu (1 - \alpha) \sigma^2 v + \delta \mu \alpha (1 - \mu) \sigma v + \delta \mu (1 - \mu) (1 - \alpha) \sigma^2 v
\]

4.2 Online Search

When online matching platform provides search services, the probability of detecting a potential match-seeker through the platform will increase \( \frac{1}{\mu} \) times. The probability that a match-seeker is H-type is \( \alpha \). Both H- and L-types have two choices direct search and online search. Therefor the game has four results. The payoffs are shown in table1.

<table>
<thead>
<tr>
<th>L-type</th>
<th>Direct market</th>
<th>Online platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct market</td>
<td>( V_{dd}^H ), ( V_{dd}^L )</td>
<td>( V_{do}^H ), ( V_{do}^L )</td>
</tr>
<tr>
<td>Online platform</td>
<td>( V_{dd}^L ), ( V_{do}^L )</td>
<td>( V_{do}^H ), ( V_{do}^L )</td>
</tr>
</tbody>
</table>

The payoff functions from table 1 are as follows:

Case 1. The value functions when both types search in direct market are given in proposition 1.

Case 2. When H-types search online while L-types search in direct market. The value function for both types in a matching process are:

\[
V_{do}^H = \alpha v + (1 - \alpha) \delta \alpha v - \rho \\
V_{do}^L = \mu (1 - \alpha) \sigma^2 v + \delta (1 - \mu) \sigma (1 - \alpha) \sigma^2 \mu v
\]

Case 3. When both type search online, The L-type will mimic the H-type for higher value. Without a reliable authentication mechanism the H-type cannot be exclusive. The value functions of both types are

\[
V_{do}^H = \alpha v + (1 - \alpha) \delta \alpha v - \rho \\
V_{do}^L = \mu (1 - \alpha) \sigma^2 v + \delta (1 - \mu) \sigma (1 - \alpha) \sigma^2 \mu v
\]

Case 4. When L-types search online while H-types search in direct market. The value function for both types in a matching process are:

\[
V_{do}^H = \alpha \mu v + \delta (1 - \mu \alpha) \alpha \mu v \\
V_{do}^L = (1 - \alpha) \sigma^2 v + \delta \alpha (1 - \alpha) \sigma^2 v - \rho
\]

When only L-types use online search, \( V_{do}^L > V_{dd}^L > V_{do}^H > V_{do}^H \).

When \( V_{do}^L - V_{dd}^L > 0 \), \( p < p_i = ((\delta \alpha + (\mu - 1)(\delta \mu - 1))(1 - \alpha) \sigma + \mu \alpha (\delta \mu - \delta - 1) \sigma v \). When
\[
\sigma > \frac{\mu\alpha(1-\delta\mu+\delta)}{(\delta\alpha + (\mu-1)(\delta\mu-1))(1-\alpha)} > 1, \quad p_1 > 0.
\]

It contradicts \(1 > \sigma > 0\). So case 4 cannot be feasible.

**Lemma 1.** There exist thresholds \(P_M^H\) and \(P_M^L\), when \(p\) is in different ranges the equilibrium behavior of both type match-seekers are as follows:

(i) When \(p > P_M^H\), both type search in direct market.

(ii) When \(P_M^L < p < P_M^H\), H-type search on the online matching platform while the L-type search in direct market.

(iii) When \(p < P_M^L\), both type search on the online matching platform.

Lemma 1 shows that the search fees determine the selection of match-seekers. Only when the search fee meets the expectation of each type, they will choose to search online. We can examine the optimal pricing strategy after clarifying the relationship between match-seekers’ behavior and pricing of online matching platform. The platform has to make decision on whether to cater H-type only or provide service to both types. The price of offering service to H-type only is higher than to both types, but the number of customers is lower than both types. To determine the optimal pricing strategy for the platform, comparing the platform’s profit in these two pricing strategies is necessary. The profit function of serve two types is \(\pi_\infty^0 = p\), when \(p < P_M^L\). The profit function of catering H-type only is \(\pi_\infty^H = \alpha p\), when \(P_M^L < p < P_M^H\).

**Proposition 2.** Whether it is optimal for the platform to serve H-type only depends on the range of \(\sigma\) and \(\delta\). The equilibrium behavior of online matching platform will be as follows:

(i) When \(\sigma < \min[\bar{\sigma}, \sigma_2]\) it is optimal for the platform to price such that both types search online.

(ii) When \(\sigma > \max[\bar{\sigma}, \sigma_2]\) it is optimal for the platform to price such that both types search online.

(iii) When \(\min[\bar{\sigma}, \sigma_3] < \sigma < \max[\bar{\sigma}, \sigma_3]\), it is optimal for the platform to price such that only H-type search online.

(iv) When \(\sigma < \min[\bar{\sigma}, \sigma_3]\), it is optimal for the platform to price such that both types search online.

(v) When \(\min[\bar{\sigma}, \sigma_3] < \sigma < \max[\bar{\sigma}, \sigma_3]\) and \(\delta < \bar{\delta}\), it is optimal for the platform to price such that only H-type search online.

(vi) When \(\min[\bar{\sigma}, \sigma_3] < \sigma < \max[\bar{\sigma}, \sigma_3]\) and \(\delta > \bar{\delta}\), it is optimal for the platform to price such that only H-type search online.

In EPC, the platform should build a strategy set instead of choosing a single strategy. The variables that determine the platform choice are \(\sigma\) and \(\delta\). In most cases, the optimal strategy for the platform is serving both types. It is because the high searching efficiency of the platform and the incentive for L-type to match with H-type. When \(\sigma\) is in the special ranges the optimal strategy for the platform is serving H-type only. The reason for this is the performance reduction caused by L-type and the patience of the match-seekers reduce H-type’s willingness to use the platform. So the platform should choose the strategy flexibly and prudently.

The maximum fee H-type would accept when both type using the platform is \(V_H^{00} - V_H^{01}\), while the maximum fee for L-type is \(V_L^{00} - V_L^{01}\). Only when the search fee is lower than the above two value,
both types would search on the platform. To adjust prices flexibly and accurately, it is necessary to examine the discipline of optimal search fee changing with respect to characteristics of the population \((\sigma, \alpha)\) and direct search efficiency \((\mu)\).

**Proposition 3.** The optimal search fee \(p^*\)

(i) is nonmonotonic in \(\sigma, \alpha\) and

(ii) is strictly decreasing in \(\mu\).

Science serving H-type only is a special case only both type online is discussed for simplifying the analysis. To cater both type match-seekers, the optimal search fee \(p^*\) is the minimum acceptable search fee for H-type and L-type. The effective search fee that the platform can charge is determined by the minimum of the willingness to pay of the two types. (Amit et al., 2019). When both type search online, the higher the value of \(\sigma\), the higher the performance value of matching with L-type is. So, the willingness of both types to pay increases as \(\sigma\) increases. When H-type only search online, the higher the value of \(\sigma\), the higher the performance value of matching with L-type is. The H-type is more willingness to match with L-type in direct market. Therefore, the willingness of H-type to search online decreases as \(\sigma\) increases. The optimal search fee changing with respect to \(\sigma\) is showed in figure 2.

Figure 2. Sensitivity Analysis of Optimal Search Fee
When α is relatively low. The H-type prefer to be inclusive. It makes online matching more cost-effective for L-type. So the willingness of L-type to search online is increasing. Because of sharing market with L-type, the expected profits of H-type is relatively low when searching online. Combining with the H-type’s preference for exclusivity the willingness of H-type to pay for the online search service fades. But when α is sufficiently high, H-type represents a dominant proportion of the population. The profits of being inclusive increases because of the reduced probability of matching with L-type. The willingness of both types to search online increase. As a result, the optimal search fee increases again.

μ is the ratio of direct matching efficiency to online matching efficiency. The higher μ is, the higher the efficiency of direct matching is. So relatively high value of μ decreases the value of online matching platform. Therefore, the willingness of both type to search online decreases as μ increases.

In summary, it is optimal for the platform to target both type for the client in most cases. Complex linear correlation between p and parameters means that the platform should adjust strategy flexibly as the parameters change. The price of online searching service should be kept within a reasonable range.

5. Conclusion

This paper studies the pricing issues of EPC online matching platform. The research outcome provides valuable insights into several problems about customer position and pricing strategy which can be used by online matching platform to operate effectively.

Without authentication service, the platform cannot prevent L-type from using online search service to mimic H-type. As a result, H-type cannot choose to be exclusive when searching online. Different from other matching platform, the online matching platform of EPC should build a strategy set on the customer orientation based on changes in σ. The interaction mechanism between optimal search fee and parameters such as α, μ and σ is complex. So the platforms should adjust prices flexibly and carefully according to changes in parameters.

The research work of this paper is based on the former research on online matching. It is the application research of online matching research in EPC. There are many meaningful directions for future work in this area. By some relaxation of assumptions and adding variables, the model can be further upgraded and expanded to make it more realistic. First, ESCO are all authenticated and qualified by the government. But there is no certification and qualification mechanism for EU. So authentication service and pricing is interesting topic for the following research. Second, we have assumed that the performance realization ability and type of companies in EPC are fixed and known to both types.
contradicts the reality. In practice, the performance realization ability and type of match-seekers can be revised during the process of searching and interacting with other match-seekers. Third, we assume that the search efficiency in direct market $\mu$ is fixed. In fact, the online matching platform can adjust retrieval efficiency by technical means. It is an important means of online matching platform intervention in match-seekers decision-making which is worth exploring. The fourth, we assume that the patience factor $\delta$ is a fixed value for all match-seekers. In real matching process, $\delta$ is different for different match-seeker. The effect of $\delta$ change on matching process and pricing is interesting area for the future research. The fifth, the decision of whether to search online which is affected by the pricing of the platform will determine the proportion of match-seekers searching online. The proportion of match-seekers searching online will affect the performance of hole EPC market. The interaction mechanism between platform pricing and overall EPC market performance is a meaningful research topic.

6. Online Appendix: Proofs

6.1 Proof of Proposition 1:

Any firms engage in EPC matching with an low type receive a value of $\sigma v$. If it abandons the match with that low type and chooses to move to the second period, then it receives a value $\delta\mu (\alpha\sigma v + (1-\alpha)\sigma^2 v)$. So the threshold on $\sigma$ above which high type will be exclusive can be determined by comparing $V_{\text{eff}}^{dd}$ and $V_{\text{eff}}^{ld}$. If high type is exclusive, it is noted that $V_{\text{eff}}^{dd} - V_{\text{eff}}^{ld} > 0$. On the contrary, $V_{\text{eff}}^{dd} - V_{\text{eff}}^{ld} < 0$ when high type is inclusive. If $V_{\text{eff}}^{dd} - V_{\text{eff}}^{ld} < 0$.

The threshold on $\sigma$ above which low type will wait until the second period is the value of $\sigma$ which makes $V_{\text{eff}}^{ld} - V_{\text{eff}}^{ld} = 0$. It is equal to the threshold on $\sigma$ above which high type will be exclusive. Further, this threshold increases in $\alpha$, $\delta$, and $\mu$.

$$\frac{\partial \sigma}{\partial \alpha} = \frac{\delta \mu \left(1 - \delta\mu \right)}{\left(\delta \mu\alpha - \delta\mu + 1\right)} > 0$$

$$\frac{\partial \sigma}{\partial \delta} = \frac{\alpha \delta}{\left(\delta \mu\alpha - \delta\mu + 1\right)} > 0$$

$$\frac{\partial \sigma}{\partial \mu} = \frac{\alpha \delta}{\left(\delta \mu\alpha - \delta\mu + 1\right)} > 0$$

6.2 Proof of Lemma 1: Matching Supported by Online Search Platform: Match-seeker’s Equilibrium Behavior.

The first case is that only low type companies use the online searching platform. The value functions must satisfy the conditions $V_{H}^{ld} < V_{H}^{oo}$ and $V_{L}^{ld} > V_{L}^{dd}$. For this to be an equilibrium strategy, we will get two value range of $p$:

$p > p_1 = \left(\frac{\delta \alpha \alpha + (\mu - 1)(\delta \mu - 1)}{(1 - \alpha)}\right)\left(\sigma + \mu \alpha - \delta \mu + \delta - 1\right)\sigma v$.

In order to make $p_1 > 0$, $\sigma > \frac{\mu \alpha - \delta \mu + \delta - 1}{(\delta \alpha \alpha + (\mu - 1)(\delta \mu - 1))(1 - \alpha)} > 1$.

$0 < \sigma < 1$. So $p < p_1 = \left(\frac{\delta \alpha \alpha + (\mu - 1)(\delta \mu - 1)(1 - \alpha)\sigma + \mu \alpha (\delta \mu - \delta - 1)}{(\delta \alpha \alpha + (\mu - 1)(\delta \mu - 1))(1 - \alpha)}\right)\sigma v$.

This cannot be an equilibrium solution.

The second case is that neither EU nor ESCO use the online search platform. The value functions must satisfy the conditions $V_{H}^{dd} > V_{H}^{de}$ and $V_{L}^{dd} > V_{L}^{dd}$. For this to be an equilibrium strategy, we will the value range of $p$: 

20
When

\[ 0 < \sigma < \frac{\alpha(\alpha \delta \mu^2 - \alpha \delta - \delta \mu + \delta - \mu + 1)}{\delta \mu (\alpha^2 \mu - \mu \alpha - \alpha + 1)} \]

And

\[ \sigma < \frac{\delta \mu \alpha}{\delta \mu \alpha - \delta \mu + 1} \]

\[ p > \tilde{P}_m = -(1 + (\sigma - 1) \mu^2) \delta \alpha^2 + \left((-1 - \mu^2 + (-\sigma + 1) \mu) \delta + \mu - 1\right) \alpha + \delta \mu \sigma \]

When

It satisfies the condition of \( V_{\mu}^{\text{OT}} > V_{\mu}^{\text{LO}} \)

When

\[ \sigma > \frac{\alpha \delta \mu}{\alpha \delta \mu - \delta \mu + 1} \]

\[ p > \tilde{P}_m = -(1 + (\sigma - 1) \mu^2) \delta \alpha^2 + \left((-1 - \mu^2 + (-\sigma + 1) \mu) \delta + \mu - 1\right) \alpha + \delta \mu \sigma \]

The third case is that only high type companies use the online searching platform. The value functions must satisfy the conditions \( V_{\mu}^{\text{OT}} > V_{\mu}^{\text{LO}} \) and \( V_{\mu}^{\text{LO}} > V_{\mu}^{\text{LO}} \). For this to be an equilibrium strategy, we will get the value range of \( p \):

\[ ((\alpha - 1)(-1 + \delta(\alpha - 1) \mu^2 + (\delta + 1) \mu) \sigma + \alpha) \sigma - \delta(1 - \mu \alpha)(\alpha \cdot \nu + (1 - \alpha) \cdot \sigma \cdot \nu) + \alpha \cdot \nu + (1 - \alpha) \cdot \delta \cdot \alpha \cdot \nu \]

6.3 Proof of Proposition 2: Online Market Supporting Search Only: Optimal Search Fee

As shown in Lemma 1, the companies in EPC have two options. The first is only high type companies use online searching platform. The second is both type companies use the platform. So there are two cases.

Case(I) Only high type companies use online search platform.

To make this case feasible, we need

When

\[ \sigma > \frac{\alpha \delta \mu}{\alpha \delta \mu - \delta \mu + 1} \]

\[ p < p_{do1} = \tilde{P}_{m1} = \alpha \cdot \nu + (1 - \alpha) \cdot \delta \cdot \alpha \cdot \nu - (\mu + \delta \cdot \mu \cdot (1 - \mu)) \cdot (\alpha \cdot \nu + (1 - \alpha) \cdot \sigma \cdot \nu) \]

The profit in this case is

\[ \pi_{do1} = p_{do1} = \tilde{P}_{m1} = \alpha \cdot \nu + (1 - \alpha) \cdot \delta \cdot \alpha \cdot \nu - (\mu + \delta \cdot \mu \cdot (1 - \mu)) \cdot (\alpha \cdot \nu + (1 - \alpha) \cdot \sigma \cdot \nu) \]

When

\[ 0 < \sigma < \frac{\alpha(\alpha \delta \mu^2 - \alpha \delta - \delta \mu + \delta - \mu + 1)}{\delta \mu (\alpha^2 \mu - \mu \alpha - \alpha + 1)} \]

And

\[ \sigma < \frac{\delta \mu \alpha}{\delta \mu \alpha - \delta \mu + 1} \]
The profit in this case is

\[ p_{oo2} = \pi_{oo2} = \alpha \cdot v + (1 - \alpha) \cdot \delta \cdot \alpha \cdot v - \mu \cdot \alpha \cdot v - \delta \cdot (1 - \mu \cdot \alpha) \cdot \mu \cdot (\alpha \cdot v + (1 - \alpha) \cdot \sigma \cdot v); \]

Case (II) Only high type companies use online search platform.

Let us consider four possibilities.

**Possibility I:** When \( \sigma < \frac{\delta \mu \alpha}{\delta \mu \alpha - \delta \mu + 1} \cdot P_{m2} \), \( P_{m2} < 0 \). So \( \overline{P_{m1}} \) and \( \overline{P_{m2}} \) cannot coexist.

Bring \( \sigma = \frac{\delta \mu \alpha}{\delta \mu \alpha - \delta \mu + 1} \) into the function

\[
\begin{align*}
P_{m2} &= \alpha \cdot v + (1 - \alpha) \cdot \delta \cdot \alpha \cdot v - \mu \cdot \alpha \cdot v - \delta \cdot (1 - \mu \cdot \alpha) \cdot \mu \cdot (\alpha \cdot v + (1 - \alpha) \cdot \sigma \cdot v) \\
\overline{P_{m2}} &= \alpha \cdot v + (1 - \alpha) \cdot \delta \cdot \alpha \cdot v - \mu \cdot \alpha \cdot v - \delta \cdot (1 - \mu \cdot \alpha) \cdot \mu \cdot (\alpha \cdot v + (1 - \alpha) \cdot \sigma \cdot v) \\
&< (1 + \delta)(\alpha - 1) \cdot \mu^2 + (\delta + 1) \cdot \mu(\alpha - 1) \cdot \frac{\delta \mu \alpha}{\delta \mu \alpha - \delta \mu + 1} + \alpha = \frac{(\alpha + 1)(\mu(\alpha - 1) + \delta + 1) \cdot \delta(\alpha - 1) \cdot \mu^2}{1 + \delta(\alpha - 1) \cdot \mu} < 0
\end{align*}
\]

**Possibility II** \( \pi_{oo1} = -\alpha \cdot \pi_{do2} \)

When \( \alpha < \frac{\mu}{\mu - 1} \), \( \sigma < 0 \). This case is impossible.

When \( \alpha \leq \frac{\mu}{\mu - 1} \), \( 0 < \sigma < \frac{(1 - \alpha)^2}{(\alpha^2 \mu^2 + (1 - \alpha) + \alpha \mu (\alpha + 1))} \), \( \pi_{oo1} - \alpha \cdot \pi_{do2} < 0 \)

Both types use online search platform is better than only high type companies use online search platform.

**Possibility III** \( \pi_{oo1} = -\alpha \cdot \pi_{do1} \)

When \( \sigma < \frac{\alpha^2(\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} \), \( \pi_{oo1} - \alpha \cdot \pi_{do2} < 0 \), Both types use online search platform is better than only high type companies use online search platform.

When \( \sigma > \frac{\alpha^2(\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} \), Only high type companies use online search platform is better than both type use online search platform.

**Possibility IV** \( \pi_{oo2} = -\alpha \cdot \pi_{do2} \)

\[
\begin{align*}
\pi_{oo2} &= \alpha \cdot \pi_{do2} = \\
&= ((\alpha - 1)(\alpha - 1) \mu^2 + (\delta + 1) \mu) \sigma + \alpha \cdot \sigma \cdot v - \alpha v - (1 - \alpha) \delta \alpha v + \alpha \mu v + \delta (1 - \mu \alpha) \mu (\alpha v + (1 - \alpha) \cdot \sigma v) \\
&= \sigma v ((\delta \alpha^2 + (1 + (\mu^2 - \mu) \delta) \alpha - (\mu - 1)(\delta \mu - 1)(\alpha - 1) \sigma + \mu \alpha^2 \delta + \alpha)
\end{align*}
\]
The formula that determines the sign of the above formula is
\[
(\delta \sigma^2 + (1 + (\mu^2 - \mu)\delta)\sigma - (\mu^2 - (\mu - 1)(\delta \mu - 1))\sigma^2 + \mu \alpha^2 \delta + \alpha = \\
(\alpha^2 \mu - (1 - \alpha)\alpha^2 \sigma - (1 - \mu)\mu \sigma(\alpha - 1)^2)\delta + (\alpha^2 \sigma + \alpha(1 - \sigma) + \sigma(1 - \alpha)(1 - \mu))
\]

When \( \alpha^2 \mu - (1 - \alpha)\alpha^2 - (1 - \mu)\sigma(\alpha - 1)^2 ) \sigma > 0 \),
\[
\sigma \sim \frac{\alpha^2 \mu}{(1 - \alpha)\alpha^2 + (1 - \mu)\sigma(\alpha - 1)^2};
\]
\[
(\alpha^2 \mu - (1 - \alpha)\alpha^2 \sigma - (1 - \mu)\mu \sigma(\alpha - 1)^2)\delta + (\alpha^2 \sigma + \alpha(1 - \sigma) + \sigma(1 - \alpha)(1 - \mu)) > 0.
\]
When \( \delta > 0 \), Only high type companies use online search platform. But it contradicts 0 < \( \delta < 1 \). So this situation does not exist.

When \( \alpha^2 \mu - (1 - \alpha)\alpha^2 - (1 - \mu)\sigma(\alpha - 1)^2 ) \sigma < 0 \),
\[
\sigma \sim \frac{\alpha^2 \mu}{(1 - \alpha)\alpha^2 + (1 - \mu)\sigma(\alpha - 1)^2};
\]

\[
(\alpha^2 \mu - (1 - \alpha)\alpha^2 \sigma - (1 - \mu)\mu \sigma(\alpha - 1)^2)\delta + (\alpha^2 \sigma + \alpha(1 - \sigma) + \sigma(1 - \alpha)(1 - \mu)) < 0.
\]

If both type use online search platform but it contradicts 0 < \( \delta < 1 \).

Proof of Proposition 3: Online Market Supporting Search Only: Sensitivity of optimal search fee with \( \alpha, \mu \), and \( \eta \).

It is optimal for the platform to price its search service at \( p^* \) according to the range of \( \sigma \).

In the case of \( \alpha \leq \frac{\mu}{1 - \mu^2} \),

When
\[
\frac{\alpha^2 (\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} \times \sigma \sim \frac{1}{(1 - \alpha) \alpha^2 (1 - \alpha) \alpha^2 + \alpha \mu (\alpha + 1)}, \quad p^* = \pi_{oo1}
\]

When
\[
\frac{\alpha^2 \mu}{(1 - \alpha) \alpha^2 + (1 - \mu) \sigma (\alpha - 1)^2} \times \sigma \sim \frac{\alpha^2 (\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)}
\]

23
And 
\[ 0 < \delta < \frac{-\left(\alpha^2 \sigma + \alpha(1 - \sigma) + \sigma(1 - \alpha)(1 - \mu)\right)}{(\alpha^2 \mu - (1 - \alpha) \alpha^2 \sigma - (1 - \mu) \mu \sigma \alpha(1 - \sigma)^2)}, \quad P^* = \min[\pi_{oo2}, \pi_{do2}] \]

When 
\[ \frac{\alpha^2 \mu}{(1 - \alpha) \alpha^2 + (1 - \mu) \sigma \alpha(1 - \sigma)^2} < \delta < \frac{\alpha^2 (\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} \]
and 
\[ \delta > \frac{-\left(\alpha^2 \sigma + \alpha(1 - \sigma) + \sigma(1 - \alpha)(1 - \mu)\right)}{(\alpha^2 \mu - (1 - \alpha) \alpha^2 \sigma - (1 - \mu) \mu \sigma \alpha(1 - \sigma)^2)}, \quad P^* = \min[\pi_{do1}, \pi_{do2}] \]

When 
\[ 0 < \sigma < \frac{\alpha^2 \mu}{(1 - \alpha) \alpha^2 + (1 - \mu) \sigma \alpha(1 - \sigma)^2}, \quad P^* = \pi_{oo2} \]

So it is necessary to discuss the monotonicity of the parameters in sections.

(1) The monotonicity of \( P^* \) vs. \( \alpha \).

When 
\[ \frac{\alpha^2 (\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} < \delta < \frac{(1 - \alpha) \alpha^2}{(\alpha^2 \mu (1 - \alpha) + \alpha \mu (1 + \alpha \mu))} \]
\[ \frac{\delta \pi_{oo1}}{\delta \alpha} = 3 \mu^2 \alpha \alpha^2 \delta + 1 - (\delta + 1) \mu > 0 \]
\( P^* \) is increasing in \( \alpha \).

When 
\[ \frac{\alpha^2 \mu}{(1 - \alpha) \alpha^2 + (1 - \mu) \sigma \alpha(1 - \sigma)^2} < \delta < \frac{\alpha^2 (\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} \]
And 
\[ 0 < \delta < \frac{-\left(\alpha^2 \sigma + \alpha(1 - \sigma) + \sigma(1 - \alpha)(1 - \mu)\right)}{(\alpha^2 \mu - (1 - \alpha) \alpha^2 \sigma - (1 - \mu) \mu \sigma \alpha(1 - \sigma)^2)}, \quad P^* = \min[\pi_{oo2}, \pi_{do1}] \]
\[ \frac{\delta \pi_{oo2}}{\delta \alpha} = -\mu(1 + \delta(\alpha - 1) \mu^2 + (\delta + 1) \mu \sigma + (\alpha - 1) \delta \mu^2 \sigma + 1) \]
This formula is not always greater than 0. So when \( P^* = \pi_{oo2} \), it is non-monotonic in \( \alpha \).

So when \( P^* = \pi_{oo2} \), it is non-monotonic in \( \alpha \).

This formula is not always greater than 0. So when \( P^* = \pi_{oo2} \), it is non-monotonic in \( \alpha \).

So when \( P^* = \pi_{oo2} \), it is non-monotonic in \( \alpha \).

(2) The monotonicity of \( P^* \) vs. \( \mu \).

When 
\[ \frac{\alpha^2 (\delta + \delta \mu + \mu - 1)}{(\alpha \delta \mu + \alpha \mu + 1 - \alpha \delta \mu^2)} < \delta < \frac{(1 - \alpha) \alpha^2}{(\alpha^2 \mu (1 - \alpha) + \alpha \mu (1 + \alpha \mu))} \]
\[ \frac{\delta \pi_{oo1}}{\delta \mu} = 2 \alpha^2 \delta \mu - \alpha \delta \sigma > 0 \]
\( P^* \) is increasing in \( \alpha \) and non-monotonic in \( \alpha \) in other value ranges.
When
\[
\frac{\alpha^2 \mu}{(1-\alpha)\alpha^2 + (1-\mu)\sigma(\alpha-1)} \prec \sigma \prec \frac{\alpha^2 (\delta + \delta\mu + \mu - 1)}{(\alpha\delta\mu + \alpha\mu + 1 - \alpha\delta\mu^2)}
\]
And
\[
0 \prec \delta \prec \frac{-(\alpha^2 \sigma + \alpha(1-\sigma) + \sigma(1-\alpha)(1-\mu))}{(\alpha^2 \mu - (1-\alpha)^2 \sigma - (1-\mu)\mu\sigma(\alpha-1)^2)}\quad P^* = \min[\pi_{o2}, \pi_{dol}]
\]
\[
\frac{\partial \pi_{o2}}{\partial \mu} = (\alpha-1)(2\delta(\alpha-1)\mu + \delta + 1)\sigma^2 \prec 0 \quad P^* = \pi_{o2} \text{ is decreasing in } \mu.
\]
\[
\frac{\partial \pi_{dol}}{\partial \mu} = -\sigma(\alpha + (1-\alpha)\sigma)(1+\delta(1-2\mu)) \prec 0 \quad P^* = \pi_{dol} \text{ is decreasing in } \mu.
\]
\[
\frac{\partial \pi_{o2}}{\partial \sigma} = -\sigma(\alpha + (1-\alpha)\sigma)\delta \prec 0 \quad \text{So when } P^* = \pi_{o2} \text{ is decreasing in } \mu.
\]
So \(P^*\) is decreasing in \(\mu\).

(3) The monotonicity of \(P^*\) vs. \(\sigma\).
When
\[
\frac{\alpha^2 (\delta + \delta\mu + \mu - 1)}{(\alpha\delta\mu + \alpha\mu + 1 - \alpha\delta\mu^2)} \prec \sigma \prec \frac{(1-\alpha)\alpha^2}{(\alpha^2 \mu^2 (1-\alpha) + \alpha\mu(\alpha+1))} \quad P^* = \pi_{o2}
\]
\[
\frac{\partial \pi_{o2}}{\partial \sigma} = 1 \succ 0 \quad \text{So when } P^* = \pi_{o2}\text{ is increasing in } \sigma.
\]
When
\[
\frac{\alpha^2 \mu}{(1-\alpha)\alpha^2 + (1-\mu)\sigma(\alpha-1)} \prec \sigma \prec \frac{\alpha^2 (\delta + \delta\mu + \mu - 1)}{(\alpha\delta\mu + \alpha\mu + 1 - \alpha\delta\mu^2)}
\]
And
\[
0 \prec \delta \prec \frac{-(\alpha^2 \sigma + \alpha(1-\sigma) + \sigma(1-\alpha)(1-\mu))}{(\alpha^2 \mu - (1-\alpha)^2 \sigma - (1-\mu)\mu\sigma(\alpha-1)^2)}\quad p^* = \min[\pi_{o2}, \pi_{dol}]
\]
\[
\frac{\partial \pi_{o2}}{\partial \sigma} = (2(\alpha-1)(1-\mu)(\delta\mu - 1)\sigma + \alpha) \succ 0 \quad P^* = \pi_{o2} \text{ is increasing in } \sigma.
\]
\[
\frac{\partial \pi_{dol}}{\partial \sigma} = \sigma(-(\mu + \delta\mu(1-\mu))(1-\alpha)\sigma) \prec 0 \quad P^* = \pi_{dol} \text{ is decreasing in } \sigma.
\]
\[
\frac{\partial \pi_{o2}}{\partial \sigma} = \sigma(-(\mu + \delta\mu(1-\mu))(1-\alpha)\sigma) \succ 0 \quad \text{So when } P^* = \pi_{dol} \text{ is decreasing in } \sigma.
\]
So when \(P^* = \pi_{o2}\) is decreasing in \(\sigma\).

It is increasing in \(\sigma\).
So when \(P^* = \pi_{dol}\).
It is decreasing in \(\sigma\).
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THE IMPACT OF ECONOMIC FACTORS ON FINANCIAL PERFORMANCE IN MALAYSIA

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ABSTRACT
This research determines the impact of microeconomic, industry-specific, and macroeconomic variables on the financial performance of the economic sector in Malaysia, namely construction, consumer products and services, energy, health care, industrial products and services, plantation, property, technology, telecommunications and media, transportation and logistics, and utilities. The research used panel data analysis for all 11 economic sectors in Bursa Malaysia and covered the period from 2010 to 2019. It is identified that the lagged effect of financial performance has significant impact on financial performance for the overall and 3 specific economic sectors such as consumer products and services, industrial products and services, and property. Microeconomic and macroeconomic variables meanwhile lead to different impacts on economic sectors. The findings benefit various parties such as investors and policymakers. Apart from that, information obtained from the analysis can also be used for future research.

Keywords: Financial Performance, Share Price, Microeconomic Variables, Macroeconomic Variables, Panel Data Analysis

1. Introduction

Financial performance represents the financial health of firms and provides insight into firms’ ability to generate profit to meet the short-term and long-term financial obligation (Maverick, 2020). Besides that, financial performance is significant for an investor in forming up their portfolio investment based on the potential return. Return on assets and return on equity (Al-Homaidi, Tabash, Farhan, & Almaqtar, 2018; Iskandar, Che-Yahya, & Wahid, 2019; Khaled, 2020) are the most common indicator to measure for the financial performance of firms. Return on asset measures the efficiency of firms in utilizing the asset to generate profits (James & Hargrave, 2021). Meanwhile, return on equity is used to measure the gauge of profit-generating efficiency for firms (Mcclure, 2021). Based on Figure 1 and Figure 2, the trend movement of both performances is not stable from 2010 until 2019. It indicates that firms might not be able to utilize the asset and equity in profit generation. The unstable financial performance is a snapshot of economic health (Kenton & Scott, 2021) and represents that the economic condition of Malaysia is unstable as well.

Share prices are the most observable of all measures and can be used to access the performance of a listed company (Kumar, 2016). Based on Figure 3, KLCI as a benchmark of the Malaysian stock index shows that the movement is upward trending but fluctuated. According to Aromolaran (2016), the stock market is one of the barometers of assessing the financial performance of firms. The growth of the stock market is a sign of the development of the sector as well as the economy of a country. It is significant since financial performance counters the challenges not only from financial markets but also from macroeconomic phenomena.
Based on Figure 4, GDP growth had a slightly declined pattern, interest rate and exchange rate had an upward trend, while inflation rate had a high fluctuated movement. However, each sector may face a different type of challenge from microeconomic, industry-specific, and macroeconomic variables.

![Figure 1. Trend Movement of Average ROA](image1)

![Figure 2. Trend Movement of Average ROE](image2)

![Figure 3. Trend Movement of KLCI](image3)

![Figure 4. Trend Movement of Macroeconomic](image4)

Though researchers have pointed out the difference in financial performance based on economic sectors, there is a lack of empirical evidence discovered in Malaysia. The impact of economic determinants on the financial performance based on specific economic sector have been raised recently including microeconomic variables (Iskandar et al., 2019; Khaled, 2020; Thi, Van, & Van, 2020) and macroeconomic variables (Dewi, Tan, & Surjoko, 2019; Haider, Anjum, Sufyan, Khan, & Ullah, 2018; Ismail, Ishak, Manaf, & Husin, 2018). Apart from that, fewer empirical studies been investigated to analyze financial performance by using share price (Ratemo, 2015). In addition, several factors, such as microeconomic, industry-specific, and macroeconomic variables are required to be analyzed for better evaluation (Matar, Al-Rdaydeh, Al-Shannag, & Odeh, 2018) on factors that influenced the economic sector's financial performance. Thus, the objective of this research is to examine the impact of economic factors on financial performance based on specific economic sectors in Malaysia. This is significant as the findings can be used as a source of reference to the policymakers in constructing relevant actions to recover or maintain the financial performance of listed firms. Other than that, an
investor could use the information to make evaluation regarding the potential growth and earn of listed firms before investment decision-making.

2. Literature Review

In this research, several theories of capital structures are applied. Modigliani and Miller's irrelevant theory represents the unrealistic impractical assumptions in financial performance (Sabin, 2015). Trade-off theory indicated optimal capital structure exists in debt financing by trade-off its benefit and cost (Myers, 1984). Packing order theory suggests that optimal capital structure does not exist in the firm performance due to managers preferring to use internal funds for investing or financing their business projects (Irwan, 2017; Hasan, 2014). Agency cost theory indicated that the cost arises from the interest conflict between principal and agent (Ahmad, 2012).

A vast number of empirical studies determine and evaluate the impacts on financial performance. Differences in studies were conducted due to different variables, the time of analysis, the place of study, and the methodology. Maja, Ivica, and Curak (2019) investigated the determinants of the Croatian manufacturing industry’s profitability covering the period from 2006 until 2015 by using dynamic panel analysis of generalized methods of moments. The result found that economic growth, inflation rate, and lag effect have a positive significant impact on return on assets. Al-Homaidi et al. (2018) employed the same method and find that asset size and lag effect have a positive significant impact on return on asset, while real gross domestic product, leverage, and liquidity have a negative significant impact on Indian commercial banks. Ashfaq, Saeedi, & Nagavh (2019) researched the industrial product sector’s performance in Malaysia. The result found that the interest rate has a negative significant impact on return on assets, while the exchange rate found insignificant output.

By employing a panel static model, Matar et al. (2018) found that gross domestic product, interest rate, leverage, liquidity, sales growth, and size have a positive significant impact on return on assets, while the insignificant impact is found for the inflation rate in Jordan non-financial services sector. Al-Homaidi et al. (2018) also found that inflation rate, asset size, and liquidity have a positive significant impact on return on asset, while exchange rate and leverage have a negative significant impact. Insignificant results are found for real gross domestic product and interest rate. For return on equity as financial performance, real gross domestic product and asset size have a positive significant impact, while exchange rate and leverage have a negative significant impact. Insignificant results are found for the inflation rate, liquidity, and interest rate. The same result of leverage also is found by Alzharani, Che-Ahmad, & Aljaaidi (2012) in Saudi Arabia. Besides that, Al-Homaidi et al. (2018) employed generalized methods of moments and found that leverage, liquidity, and lag effect have a positive significant impact, while inflation rate, exchange rate, and interest rate have a negative significant impact. Meanwhile, insignificant results are found for asset size and real gross domestic product. Besides that, Ratemo (2015) investigated the relationship between share prices and financial performance. The result found that share prices are positively and significantly correlated with ROA.

3. Methodology

All the data obtained from Bloomberg include microeconomic variables and industry-specific variables, while macroeconomic variables are obtained from World Bank Indicator. This research covers the period from 2010 until 2019 for listed firms in the main market of Bursa
Malaysia with the availability of the data. Total observation of 230 for Construction sector, 800 for Consumer Products and Services sector, 90 for Energy sector, 910 for Industrial Products and Services sector, 200 for Plantation sector, 390 for Property sector, 170 for Technology sector, 90 for Telecommunications and Media sector, and 80 for Utilities sector.

The fixed-effect model explores the relationship between dependent and independent variables within an entity. Each entity has its specific effect, and the fixed effect model is applied to control the correlation. Unlike the fixed-effect model, the variation across entities is assumed random and uncorrelated with the independent variables included in the random effect model (Anna, Antonello, & Angelo, 2013). The panel static model can be written as:

\[
\ln \text{ROA}_it = \beta_0 + \beta_1 \ln \text{FS}_it + \beta_2 \ln \text{SG}_it + \beta_3 \ln \text{LIQ}_it + \beta_4 \ln \text{LEV}_it + \beta_5 \ln \text{SP}_it + \beta_6 \ln \text{GDPG}_it + \beta_7 \ln \text{INF}_it + \beta_8 \ln \text{ER}_it + \beta_9 \ln \text{IR}_it + \varepsilon_t
\]

Equation (1) and (2) shows the function of financial performance and static regression model in this research, whereby return on asset (ROA), return on equity (ROE), firm size (FS), sales growth (SG), liquidity (LIQ), leverage (LEV), share prices (SP), domestic gross product growth (GDPG), inflation rate (INF), exchange rate (ER), and interest rate (IR). FS and SG be proxy as control variables. The term of ln refers to the natural logarithm. t refers to the time period, while i refers to the number of individuals. \( \beta \) refers to constant, \( \beta \) to \( \beta \) refers to slope coefficient of microeconomic variables. \( \theta \) refers to slope coefficient of industry-specific variable, \( \varphi \) to \( \varphi \) refers to slope coefficient of macroeconomic variables. Meanwhile, \( \varepsilon \) refers to the error terms in the model.

Dynamic analysis is significant in corporate finance as it can provide an insight that cannot be obtained from another way. This is because the optimal timing of investment projects, equity issuance, and debt refinancing are inherently dynamic (Strebulaev & Whited, 2012). Therefore, this research will utilize the Generalized Methods of Moments method. The GMM estimators were introduced by Arellano and Bond (1991) and Arellano and Bover (1995). For simplicity, based on equations 1 and 2, the dynamic panel regression takes the following form:

\[
\ln \text{ROA}_it = \beta_0 + \delta \ln \text{ROA}_{i,t-1} + \beta_1 \ln \text{FS}_it + \beta_2 \ln \text{SG}_it + \beta_3 \ln \text{LIQ}_it + \beta_4 \ln \text{LEV}_it + \beta_5 \ln \text{SP}_it + \beta_6 \ln \text{GDPG}_it + \beta_7 \ln \text{INF}_it + \beta_8 \ln \text{ER}_it + \beta_9 \ln \text{IR}_it + \varepsilon_t
\]

\[
\ln \text{ROE}_it = \beta_0 + \delta \ln \text{ROE}_{i,t-1} + \beta_1 \ln \text{FS}_it + \beta_2 \ln \text{SG}_it + \beta_3 \ln \text{LIQ}_it + \beta_4 \ln \text{LEV}_it + \beta_5 \ln \text{SP}_it + \beta_6 \ln \text{GDPG}_it + \beta_7 \ln \text{INF}_it + \beta_8 \ln \text{ER}_it + \beta_9 \ln \text{IR}_it + \varepsilon_t
\]

Based on Equations (3) and (4), the presence of lagged dependent variables will lead to an endogeneity issue. According to Arellano and Bond (1991), endogeneity can be addressed by transforming the data using the differentiation method. However, Blundell and Bond (1998) argued that the difference in GMM might affect huge sample bias, thus, proposed the system GMM estimators to improve efficiency by using both lagged levels and different information. Therefore, both methods will be adopted namely difference and system-GMM in two-step to ascertain the results’ robustness. Roodman (2009) stated that the two-step system GMM is more efficient and robust and the statistical tests are more reliable.

Apart from this, several diagnostic checking methods will be employed in this research for both of the regression models. The diagnostic test is performed to test whether the model’s adequacy is sufficient or not. Autocorrelation test and heteroskedasticity test for panel static model, while endogeneity test, heteroskedasticity test, Arellano Bond test of autocorrelation, and sargan test for panel dynamic regression model. Sargan test is used to prevent the two-step GMM from
producing a biased standard error and the parameter led to a weakened over-identification test. Robust standard error will be performed if the model exists the diagnostic problem.

4. Result and Discussion

Table 2 shows that lagged effect has a significant positive relationship on both the current performance of ROA and ROE compared to the property sector which has a negative relationship. Besides that, only the property sector has a significant positive relationship with the share price, while the significant negative impact is from leverage and interest rate. Liquidity has a statistically significant negative relationship for all sectors and the property sector (ROE). At the same time, all sectors and the industrial products and services sector have a statistically significant positive relationship with GDP growth. However, the consumer products and services sector (ROA) has a negative relationship. Besides that, the inflation rate results in a significant negative relationship between the industrial products and services sector and the property sector. This relationship is similar to the exchange rate which has a statistically significant negative relationship on all sectors (ROA) and the property sector. The result of the Arellano-Bond test of autocorrelation at second-order confirms that there is no second-order autocorrelation in the model. Furthermore, robust standard errors are applied to overcome the bias of standard errors in two-step GMM. Hence, no result is estimated from the Sargan test.

Table 3 shows that share price has a significant positive relationship with the construction sector (ROA), technology sector (ROE), health care sector, transportation, and logistics sector (ROA), and utility sector. However, the plantation sector found a significant negative relationship. Liquidity is estimated in a negative impact on the construction sector (ROE), telecommunications and media sector, and transportation and logistics sector significantly, while liquidity has a positive significant impact on the health care sector (ROA). The construction sector (ROA), health care sector and utility sector (ROA) has a negative relationship from leverage, while the positive result for the telecommunications and media sector. A significant positive impact of GDP growth for the technology sector (ROA). However, the plantation sector has a negative relationship. Apart from this, a negative impact of the inflation rate on the health care sector. A negative impact of the exchange rate for the construction sector (ROA) and the plantation sector (ROA), while the energy sector and transportation and logistics sector have a positive relationship. Last but not least, the plantation sector has a statistically significant positive relationship with interest rates.

The positive result of the lagged effect is supported by Majar et al. (2019) and Al-Homaidi et al. (2018) which implied that the sector produced advantaged goods or provide specific service are not threatened by strong competitors. However, the negative result of lagged effect for property sector can be explained by the rising number of unsold homes lead to lower performance (Tong & Analytica, 2020). The positive impact of the share price is similar to Ratemo (2015). Listed firms could receive more capital for business expansion as investors believed that firms have a high potential to generate profits. While a negative impact of share price indicated listed firms suffered from the debt financing hence resulting investors tend to sell out the share units. On the contrary, the positive impact of liquidity and leverage are as postulated by the trade-off theory for ROA (Maja et al., 2019; Al-Homaidi et al., 2018) and agency cost theory for ROE (Al-Homaidi et al., 2018). In contrast, the negative impact of liquidity and leverage is in line with the pecking order theory (Al-Homaidi et al., 2018; Alzharani et al., 2012).
### Table 2. GMM Estimator Result

<table>
<thead>
<tr>
<th>Sector</th>
<th>All</th>
<th>Consumer Products and Services</th>
<th>Industrial Products and Services</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROA</td>
<td>ROE</td>
<td>ROA</td>
<td>ROE</td>
</tr>
<tr>
<td>Lagged Depend</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dependent</td>
<td>0.2209*</td>
<td>0.2499***</td>
<td>0.2144*</td>
<td>0.1863*</td>
</tr>
<tr>
<td>Share Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1021</td>
<td>0.0557</td>
<td>0.1748</td>
<td>0.1452</td>
</tr>
<tr>
<td>Liquidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.2978*</td>
<td>-0.3778**</td>
<td>-0.2665</td>
<td>-0.0116</td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.1533</td>
<td>-0.0410</td>
<td>-0.0922</td>
<td>0.0199</td>
<td>0.0395</td>
</tr>
<tr>
<td>Firm Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-1.5600</td>
<td>-1.5330</td>
</tr>
<tr>
<td>Sales Growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td></td>
<td>0.0080</td>
<td>0.0130</td>
</tr>
<tr>
<td>GDP Growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.9309*</td>
<td>0.9376**</td>
<td>-0.6138*</td>
<td>-0.4818</td>
<td>0.9137*</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.1817</td>
<td>-0.1262</td>
<td>0.1545</td>
<td>0.0702</td>
<td>-0.1910*</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8805*</td>
<td>-0.3317</td>
<td>-0.5894</td>
<td>-0.4323</td>
<td>0.9335</td>
</tr>
<tr>
<td>Interest Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2.2516</td>
<td>-1.3863</td>
<td>-0.1677</td>
<td>-0.6507</td>
<td>-2.4919</td>
</tr>
<tr>
<td>Constant</td>
<td>4.9853</td>
<td>3.0985</td>
<td>4.6275*</td>
<td>4.9780**</td>
</tr>
<tr>
<td>Hausman Test</td>
<td>193.96* ** 170.5200* ** 181.5700*** 170.7800* ** 180.8600*** 156.5000*** 159.4700*** 115.1700***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Wald Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87341.2 *** 54284.410 4284.420 41208.110 1.7e+05 0.2907 0.4506 0.7435 0.1393 0.1868</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWH Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABA Test 1st Order</td>
<td>3.3197* 3.5062** -3.672*** 5.3635* 4.8949* 2.9947* 3.0339**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABA Test 2nd Order</td>
<td>1.279 1.3006 0.2907 -0.0250 0.4506 0.7435 0.1393</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sargan Test</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes: Both difference GMM (FD-GMM) and system GMM (SYS-GMM) regressions use two-step estimation. The GMM estimator is selected based on the upper bound (pooled ordinary least square) and lower bound (fixed effect model) criteria (Bond, 2002). Control variables will drop from the regression model to obtain an efficient estimate. The value inside the parentheses refers to the p-value of the variable, where *, **, and *** refers to the significance level at 10%, 5%, and 1%. M. Wald Test refers to Modified Wald Test. DWH Test refers to Durbin-Wu-Hausman Test. ABA Test 1st Order refers to Arellano Bound of Autocorrelation Test at First Order. ABA Test 2nd Order refers to Arellano Bound of Autocorrelation Test at Second Order.
Table 3. Static Panel Estimator Result

<table>
<thead>
<tr>
<th>Sector</th>
<th>Construction</th>
<th>Energy</th>
<th>Telecommunications and Media</th>
<th>Plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROA</td>
<td>ROE</td>
<td>ROA</td>
<td>ROE</td>
</tr>
<tr>
<td>Variable</td>
<td>RE</td>
<td>RE</td>
<td>POLS</td>
<td>POLS</td>
</tr>
<tr>
<td>Share Price</td>
<td>0.2926*</td>
<td>0.2559</td>
<td>-</td>
<td>0.1686</td>
</tr>
<tr>
<td>Liquidity</td>
<td>0.0533</td>
<td>0.6551*</td>
<td>0.5964</td>
<td>0.2069</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.2048*</td>
<td>-0.0299</td>
<td>-</td>
<td>0.0464</td>
</tr>
<tr>
<td>Firm Size</td>
<td>-</td>
<td>-</td>
<td>0.3273</td>
<td>-</td>
</tr>
<tr>
<td>Sales Growth</td>
<td>0.0253</td>
<td>0.0470</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GDP Growth</td>
<td>0.4481</td>
<td>0.5367</td>
<td>0.2304</td>
<td>0.4674</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>0.0096</td>
<td>0.1114</td>
<td>0.1751</td>
<td>0.3180</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>1.3516*</td>
<td>-1.0674</td>
<td>2.4327*</td>
<td>2.7402*</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>-2.5367</td>
<td>-1.2684</td>
<td>4.3768</td>
<td>2.6216</td>
</tr>
<tr>
<td>Constant</td>
<td>6.5445</td>
<td>4.9131</td>
<td>8.1622</td>
<td>5.9362</td>
</tr>
<tr>
<td>BP LM Test</td>
<td>87.72**</td>
<td>80.28**</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Hausman Test</td>
<td>6.7400</td>
<td>7.7400</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>M. Wald Test/Het. Test</td>
<td>1.9100</td>
<td>0.5800</td>
<td>0.0100</td>
<td>0.9100</td>
</tr>
<tr>
<td>W. Test</td>
<td>0.1990</td>
<td>0.0300</td>
<td>0.0690</td>
<td>0.0790</td>
</tr>
</tbody>
</table>

Notes: Control variables will drop from the regression model to obtain an efficient estimate. The estimation model is selected based on the result of BP LM test and Hausman test. The value inside the parentheses refers to the p-value of the variable, where *, **, and *** refers to the significance level at 10%, 5%, and 1%. # refers to the model applied with robust standard error to overcome the problem of serial correlation and heteroskedasticity. BP BP LM Test refers to Breusch and Pagan Lagrangian Multiplier Test. M. Wald Test refers to Modified Wald Test. Het. Test refers to Heteroskedasticity Test. W. Test refers to Wooldridge Test.
Table 3. Static Panel Estimator Result (Continued)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Health Care</th>
<th>Transportation and Logistics</th>
<th>Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROA</td>
<td>ROE</td>
<td>ROA</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td>RE</td>
<td>FE</td>
<td>POLS</td>
</tr>
<tr>
<td></td>
<td>RE</td>
<td>FE</td>
<td>POLS</td>
</tr>
<tr>
<td><strong>Share Price</strong></td>
<td>0.2330</td>
<td>0.5195*</td>
<td>0.2256*</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td>-0.2010</td>
<td>-0.2074</td>
<td>0.6441**</td>
</tr>
<tr>
<td><strong>Leverage</strong></td>
<td>-0.1904</td>
<td>0.0928</td>
<td>-0.1929*</td>
</tr>
<tr>
<td><strong>Firm Size</strong></td>
<td>0.5961*</td>
<td>**</td>
<td>0.4584**</td>
</tr>
<tr>
<td><strong>Sales Growth</strong></td>
<td>-0.0400</td>
<td>-0.0737</td>
<td>0.1248</td>
</tr>
<tr>
<td><strong>GDP Growth</strong></td>
<td>1.7313*</td>
<td>1.4461</td>
<td>1.1098</td>
</tr>
<tr>
<td><strong>Inflation Rate</strong></td>
<td>-0.2793</td>
<td>-0.3222</td>
<td>-0.6836**</td>
</tr>
<tr>
<td><strong>Exchange Rate</strong></td>
<td>-0.1605</td>
<td>-0.0579</td>
<td>-1.9628</td>
</tr>
<tr>
<td><strong>Interest Rate</strong></td>
<td>1.1556</td>
<td>1.5682</td>
<td>-6.3165</td>
</tr>
<tr>
<td><strong>BP LM Test</strong></td>
<td>4.65**</td>
<td>2.71**</td>
<td>0.0600</td>
</tr>
<tr>
<td><strong>Hausman Test</strong></td>
<td>3.49</td>
<td>21.73**</td>
<td>-</td>
</tr>
<tr>
<td><strong>M. Wald Test/ Het. Test</strong></td>
<td>0.90</td>
<td>578.10**</td>
<td>18.1600*</td>
</tr>
<tr>
<td><strong>W. Test</strong></td>
<td>0.109</td>
<td>0.377</td>
<td>31.9470**</td>
</tr>
</tbody>
</table>

Notes: Control variables will drop from the regression model to obtain an efficient estimate. The estimation model is selected based on the result of BP LM test and Hausman test. The value inside the parentheses refers to the p-value of the variable, where *, **, and *** refers to the significance level at 10%, 5%, and 1%. - refers to the model applied with robust standard error to overcome the problem of serial correlation and heteroskedasticity. BP LM Test refers to Breusch and Pagan Lagrangian Multiplier Test. M. Wald Test refers to Modified Wald Test. Het. Test refers to Heteroskedasticity Test. W. Test refers to Wooldridge Test.

The positive impact of GDP growth is supported by Maja et al. (2019) and Al-Homaidi et al. (2018) and it suggests that favorable economic conditions increase the demand for goods and services, which results in higher sales and achieve a higher level of profitability (Maja et al., 2019). In contrast, the result is supported by Al-Homaidi et al. (2018) for the negative sign of GDP growth. It indicated that growing faster than the current capacity will raise the price quickly due to short supply and lead to expensive services be provided (Bank of England, 2020). Besides that, a positive impact of the inflation rate is consistent with Maja et al. (2019) and Al-Homaidi et al. (2018) and it suggests that listed firms followed the anticipated inflation condition. Meanwhile, the changes in the price level would not give an effect on the firm financial performance due to the ability in remaining maximum profit with minimum cost and vice versa for unanticipated inflation conditions (Perry, 1992).
A positive impact of the exchange rate indicated an appreciation of domestic currency led to a decrease in the cost of cross-border logistics and reduce the cost of production. In contrast, the result is consistent with Al-Homaidi et al. (2018). The negative impact of the exchange rate showed depreciation of domestic currency led to an increase in the cost of input, especially import input (Ashfaq et al., 2019). The positive impact of interest rate is supported by Maja et al. (2019). It suggests optimal capital structure exists in debt financing by trade-off its benefit and cost. While the negative impact of interest rate is supported by Al-Homaidi et al. (2018) and Ashfaq et al. (2019). It indicated listed firms will not prefer debt financing although might have higher financial performance, this is because it might increase the risk of firms as well as the cost of bankruptcy (Ashfaq et al., 2019).

5. Conclusion

Based on the research finding, capital structures of liquidity or leverage result in a significant impact on financial performance for all sectors and specific economic sector. Most economic sectors are consistent with the pecking order theory, trade-off theory, and agency cost theory. However, the consumer products and services sector, energy sector, industrial products and services sector, plantation sector, and technology sector are following Modigliani and Miller's irrelevant theory. It suggests that capital structures did not result in a significant impact on financial performance. Apart from this, share price resulting in a positive impact for economic sectors except for the plantation sector. Furthermore, macroeconomic variables such as inflation rate, interest rate, and exchange rate also resulting in a significant impact on the specific economic sectors.

For future research, it is recommended that share return is used instead of the share price since share price cannot capture the effect accurately as it might influence due to the demand and supply in the stock exchange market. Apart from that, a quarterly basis data is suggested instead of a yearly basis for similar research because it could obtain more observations as some economic sectors such as the energy sector, financial services sector, the technology sector, telecommunications and media sector, and utility sector did not have sufficient data.

References


THE IMPACT OF MACROECONOMIC VARIABLES ON THE ECONOMIC PERFORMANCE OF SMEs IN MALAYSIA: AN ANALYSIS OF SMEs IN FIVE MAJOR SECTORS

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ABSTRACT

This study aims to examine the impact of macroeconomic variables on the economic performance of Malaysian SMEs from the year 2000 until 2018. The external issue reported that the continuous cost rising weighs down the performance and growth of SMEs expectedly. The internal deficiency and challenge used to determine the productivity and profitability of SMEs majorly, but limited studies to validate the performance of SMEs by using the macroeconomic variable. Thus, this study investigates the relationship between macroeconomic variables and SMEs performance. Macroeconomic data on the gross domestic product, inflation rate, interest rate, and government tax revenue were collected yearly from 2000 to 2018. The unemployment rate had taken into account as a control variable in this study. The analysis employed the Autoregressive Distributed Lag Model, Error Correction Model, Wald Test, and Keynesian Economic Theory. It is identified that in the long run, macroeconomic variables are collectively significant in influencing the performance of SMEs while the individual impact of macroeconomic variables is varied. The rise in the level of interest rate, inflation, and government tax revenue will result in a decline in the performance of agriculture, construction, mining and quarrying, and service sectors. It was found that all macroeconomic variables do not significantly influence manufacturing’s performance. Of all sectors of SMEs analyzed, the construction sector is affected by all macroeconomic variables. In the short run, the individual impact of macroeconomic factors is varied and it is also identified that the mining and quarrying sector and construction sector examine the faster speed of adjustment among other sectors within 1.3 years and 1.2 years separately. It is advised for policymakers to consider lowering the tax rate or offer a tax exemption program to encourage more business activities among SMEs. In future research, it is suggested to explore the granger effect among SMEs themselves, investigate the broader perspective of this phenomenon for SMEs by panel analysis, and employ a mixed-method approach to focus the managerial strategies undertake by SMEs during the unexpected economic situation.

Keywords: Malaysian SMEs, Macroeconomic variables, Cointegration test (ARDL), Error Correction Model (ECM), Wald Test, Keynesian Economic Theory

1. Introduction

Small and medium enterprises (SMEs) recognize as a significant role player in the economic development of many developing countries, including stimulating economic growth, creating employment opportunities, and contributing to the nation’s gross domestic product (Dzuljastr et al., 2018; Lilian et al., 2017; Hironaka et al., 2017; Michael & Johannes, 2013; Garwe et al., 2010). In Malaysia, SMEs regard as a vital contributor to the economic development and growth of the country (Raihanan et al., 2017). In this context, SMEs classify into three scales of businesses like micro, small,
and medium. In the meantime, it's categorized into five major industry sectors, including agriculture, construction, manufacturing, mining and quarrying, and service sector (SME Annual Report 2018/2019).

Nowadays, the total number of SME establishments records at 907,065 in Malaysia (SME Annual Report, 2018/2019). In 2018, the percentage of people employed by Malaysia's SMEs increased from 66% in 2017 to 66.2%, grown by 0.2%. In terms of gross domestic product (GDP) contribution, the GDP of SMEs is RM521.7 billion in 2018 at constant 2015 prices, while the total value of the overall GDP at RM1,361.5 billion. Thus, it leads to the higher contribution of SMEs to the overall GDP increased from 37.8% in 2017 to 38.3% in 2018. From the perspective of the contribution of SMEs to employment and GDP, the rising trend of the contribution share of SMEs indicates that SMEs play a significant role in the national economy and development.

The role of SMEs in economic development is discussed widely in previous literature, sustaining issue remains faced by SMEs. As reported by Tairuddin et al. (2018) and Chong (2012), 50% to 60% of Malaysian SMEs fail to sustain the business for the first five years of establishments due to changes in the business environment. The issue of continuous cost raising is part of the main concern by SMEs. According to Lee (2018), this issue weights down the performance and growth of SMEs expectedly.

Interestingly, how this cost issue is measured to explain the performance and maturity of SMEs is a concern. Under the Keynesian Economic Theory (1936), Keynes assumed that small-scale enterprises drive within a conducive environment. Some policies maintain a fixed interest rate, inflation, taxes, and other economic variables. Thus, it can capture the connection between economic factors and SMEs’ performance where the influence of inflation, interest rate, and government tax revenue on the SMEs’ performance. In this case, this study will use macroeconomic variables like interest rate, inflation, and government tax revenue to explain the performance of SMEs.

This issue may put SMEs disadvantage in their performance due to their scarcity of resources (Jaganathan et al., 2018). Hence, it is crucial to clarify the factors that caused SMEs to anticipate this aspect. The majority of scholars are tended to concentrate on internal deficiency and challenges to determine the productivity and profitability of SMEs generally (Dzuljastri et al., 2018; Garwe et al., 2010; Hironaka et al., 2017; Michael & Johannes, 2013; Sharmilee & Hoque, 2016). In this sense, it may not relevant and possible to measure the cost continuous rising issue in this particular, yet, the macroeconomic aspect in this concern is limited and analysis of SMEs in specific as well (Halim et al., 2017). In this regard, these gaps will be addressed in this paper that investigate the relationship between macroeconomic variables and SMEs performance in specific since it remains unanswered in previous literature.

The remainder of this paper organizes as follows. Section 2 discusses the definition of SMEs and empirical study on the relationships between macroeconomic variables and SMEs’ performance. Section 3 focuses on the method of analysis and provides the specification of the SME performance model. Section 4 discusses estimation results, and Section 5 concludes.

2. Literature Review

2.1 Small and Medium Enterprises (SMEs)

SMEs are a vital and significant contributor to the nations’ economic development and activities in many developing countries (Dzuljastri et al., 2018; Lilian et al., 2017; Hironaka et al., 2017; Michael & Johannes, 2013; Garwe et al., 2010). SMEs can be clarified based on a different value judgment, measurement, and criteria by other contexts of developing countries such as Turkey, the European Commission, Malaysia, Japan, and South Africa. In the Malaysian context, SMEs categorizes into manufacturing, service sector, agriculture, construction, and mining and quarrying. Then, the overall
SMEs are defined based on qualifying criteria such as sales turnover and employment. The manufacturing sector consists of sales turnover not exceeding RM50 million or full-time employees not exceeding 200. For services and other sectors, sales turnover not exceeding RM20 million or full-time employees not exceeding 75 (SME Annual Report 2018/2019, Department of Statistics Malaysia).

2.2 Definition of SMEs’ Performance and Macroeconomic Variables

This section will briefly explain the definition of variables that are selected to clarify the phenomenon issue faced by SMEs as highlighted in the Introduction, particularly for the five major sectors in the Malaysian context. These variables include the gross domestic product used to measure the performance of SMEs, interest rate, inflation, and government tax revenue.

2.2.1 Gross Domestic Product

SMEs‘ performance could reflect the enterprises’ production, output, or sales volume with the result achieved over some time. Jerill (2013) perceived that SMEs‘ performance acts as an interconnection between effective cost and recognized output, also shows the relationship between production and outcomes achieved over a while. Thus, it can measure succinctly with the registered products and services produced over the years call as GDP (Lilian et al., 2017). The performance of SMEs is significant to the country's economy based on their specific contribution to the GDP (Enu & Attha-Obeng, 2013). Halim et al. (2017) noted that SMEs' GDP support by domestic demand, particularly consumption and investment activities, to meet the market demand. Thus, most SMEs are strived to improve the sales volume by strengthening the supply-chain channels whereby, enhancing the performance (Veer, 2012). However, SMEs’ performance is affected by the economic situation or variables significantly. For instance, the economic recession affected and declined almost 8.7% of manufacturing’s production in the fourth quarter of 2016 over the same quarter in 2015 in Nigeria (Onakoya, 2018). Therefore, GDP is the appropriate measurement for SMEs’ performance since it could present the nexus between output and result achieved over a period included the impact of economic condition or variables.

2.2.2 Interest Rate

The interest rate can define as the amount fee charged on the borrowing loan principal from the bank and expressed as an annual percentage of the loan outstanding (Lilian et al., 2017).

2.2.3 Inflation

Inflation explains the stability of the country’s economy while also affecting the activities of small-scale businesses. Halim et al. (2017) stated that medium and high inflation obstructs economic growth due to the adverse effect on efficient distribution of resources by fluctuating relative prices. Therefore, inflation is a sustained increase in the general price level of goods and services in an economy over some time, thereby reducing the purchasing power of small-scale businesses per unit of money on the economy (Lilian et al., 2017).

2.2.4 Government Tax Revenue

Government tax revenue is a measure of total tax revenue that explains the income collected through taxation like personal and corporate income taxes, value-added taxes, tariffs, and registration and licenses fee (Lilian et al., 2017; Garwe et al., 2010). It is the fee charged by a government on products and services produced, income, and business. However, the multiple-taxation impacted the SMEs operation especially purchasing power, whereby affect its productive capacity and GDP (Tolu, 2013).
2.3 Literature Review of SMEs Performance and Macroeconomic Factors

This section will further discuss the findings that have been highlighted in empirical studies in both challenges on SMEs' performance and macroeconomic aspects. It is followed by a discussion of synthesis remark on this concern.

2.3.1 Reviewing of the Challenges on SMEs Performance

Garwe et al. (2010) investigated the obstacles to the growth of new SMEs in South Africa. Based on the survey data collected from 100 new SMEs in South Africa, Garwe et al. (2010) highlighted two categories of obstacles faced by SMEs, both internal and external environmental factors. Utilizing the Kolmogorov-Smirnov test under SPSS, it was identified that variables related to finance (internal factor), crime, and markets (external factor) were highly ranked by new SMEs as growth inhibitors. In contrast, the external variable of infrastructures such as poor roads, poor water supply, and poor telecommunication is lowly ranked by new SMEs in South Africa.

Michael & Johannes (2013) examined the major macro-environmental and marketing-related problems affecting South African SMEs. Based on the primary data collected from 81 SMEs in the Tshwane area, Michael & Johannes (2013) noted that SMEs were faced with various challenges that affected their long-term success and survival. The results indicated that inflation, interest rate, crime, government legislation, and unemployment are the key macro-environmental challenges affecting SMEs in South Africa. Furthermore, it was also demonstrated that the main marketing-related problems for SMEs in South Africa including wrong pricing strategies, low demand for products, location of the business, and the knowledge of the target audience.

Sharmilee & Hoque (2016) investigated factors that affected the performance of SMEs in KwaZulu-Natal (KZN). The survey data collection from 74 SME managers/owners in KZN, and employed a Chi-squared test of association under SPSS. It was identified several internal factors, such as technological capabilities, managerial competence and skills, and access to finance, that are found to affect the performance of SMEs in South Africa. In addition, Sharmilee & Hoque (2016) further argued that external factors are found to be a major challenge for SMEs in South Africa. These challenges include regulatory factors, macroeconomic factors, competition, globalization, and crime and corruption. In addition, it was demonstrated that inflation and interest rate have a strong effect on SMEs' performance in South Africa. It may be harmful to business profit, particularly those SMEs involved in imports activity. Interestingly, this analysis also identified tax laws harm the growth of SMEs. Most of 67.74% of SME owners or managers believed that tax law affected the growth of a business in which tax compliance costs and adding more administrative are the main elements that burden the flexibility of small businesses in terms of administration management and use of resources.

Dzuljastri et al. (2018) investigated issues and challenges that have affected the growth of SMEs in Malaysia and Turkey. By utilizing the secondary data and literature review, it was indicated three factors were the main challenges for SMEs in both countries. These challenges include financial assistance, the impact of the knowledge-based economy, and the impact of marketing assistance. It was demonstrated that access to financing is crucial for SMEs' sustainability in their practice of business expansion. The scarcity of funds, capital, and collateral may put them at the risk of failure, while SMEs will be charged with a high interest rate when approaching loans due to a higher risk profile. Furthermore, it is argued that SMEs lack knowledge in new fields such as green technology and limited resources in participating in the innovation diffusion. In addition, Dzuljastri et al. (2018) further argued that Malaysian SMEs also lack information about marketing channels and fail to establish marketing networks.
2.3.2 Empirical Studies of SMEs Performance and Macroeconomic Factors

Roslina et al. (2010) examined the impact of macroeconomic variables on the relative performance of agricultural sub-sectors in Malaysia. The factors data were collected quarterly from 1990: Q1 to 2009: Q4, and employed Fully Modified OLS. It was identified interest rates harm the farm income. Roslina et al. (2010) further argued that interest rates play a crucial role in affecting the farm income in Malaysia.

Bekeris (2012) analyzed the influence of macroeconomic indicators on SMEs’ profitability in Lithuania. In their study, the macroeconomic data of inflation, interest rate, and taxes were collected yearly from 2000 to 2010, and utilize a quantitative analysis of Pearson’s correlation. Bekeris (2012) identified that the factors studied were significant in affecting the profitability of SMEs. In addition, it was identified that the interest rate has a strong negative impact on the profitability of SMEs. It is argued that SMEs in general are less borrowing from banks and most like to get preferential loans with state guarantees. Interestingly, it was also demonstrated that the paid taxes show a strong correlation in the case of micro-entrepreneur as their resource may not allow comfortable with the biggest part of taxes compare to larger firms. It means that an increased taxes were slightly less favorable for the small and medium-sized enterprises except for micro-sized enterprises.

Fidlizan et al. (2013) examined the long-term relationship and causal relationship between macroeconomic variables and passenger vehicle sales in Malaysia. The macroeconomic factors: the consumer price index (CPI) and interest rate, and performance of passenger vehicles were collected from April; 2004 to December; 2010, at the monthly interval. Utilizing the Vector Autoregressive (AVR) estimation model, the factors studied where shown an insignificant long-term equilibrium relationship on the performance of passenger vehicles in Malaysia. It is argued that consumer income is the main reason caused the performance of passenger vehicles in this situation due to the increase of inflation affect the consumer income.

Apart from Fidlizan et al. (2013), Shariff & Zainab (2015) investigated the impact of macroeconomic variables on agriculture productivity in Malaysia. In their study, GDP was the indicator to express the productivity of agriculture, while interest rate and inflation were treated as macroeconomic factors. These secondary data were collected annually from 1980 to 2014 and employed the Autoregressive-Distributed Lag (ARDL) approach and error correction model (ECM). By utilizing these analyses, it was identified that the factors studied have no significant impact on agriculture productivity in the long run. It was also demonstrated that interest rate is found to has a significant impact on agriculture productivity in the short-run in Malaysia.

Halim et al. (2017) evaluated the impact of macroeconomic variables: interest rate and inflation, on the profitability of SMEs in Malaysia. In their study, SMEs’ profitability was measured by the GDP growth rate. Halim et al. (2017) collected the yearly data from 2002 to 2015 and employed a multiple regression analysis. It was identified that the factors studied were significant and contribute to the growth rate of the SMEs’ GDP. It was also demonstrated that the interest rate positively affects the SMEs GDP growth rate where the value of SMEs GDP growth rate is increasingly associated with the value of interest rate. The analysis also implied the presence of a negative relationship between inflation and SMEs’ GDP growth rate in Malaysia.

Lilian et al. (2017) determined the extent to which the economic environment of SMEs relates to economic growth in Nigeria. In their study, the performance of SMEs was measured by GDP, whereas government tax revenue, inflation, and interest rate were treated as indicators. The secondary annual data was collected yearly from 1970 to 2016 and employed a regression model. Utilizing the Ordinary Least Square (OLS), it was identified that the factors studied have a significant negative relationship with SMEs’ performance in Nigeria. In general, the consistent increase in these factors will result in an attendant decline in the performance of SMEs in Nigeria, and vice versa. In addition, Lilian et al. (2017) further argued that consumers prefer to save money than spending during the inflation period. It
increases the costs of goods for consumers and expenses for SMEs, thereby reducing sales, profit and divert investment of businesses’ performance, growth and success.

Noraini et al. (2018) investigated the impact of macroeconomic factors on the performance of insurance companies in Malaysia. In their study, the insurance company’s performance was measured by Return on Asset (ROA), whereas consumer price index (CPI) and interest rate were treated as the macroeconomic indicator. These data were collected yearly from 1996 to 2015 and employed Pearson correlation coefficient and regression analysis. Utilizing these analyses under IBM SPSS, it was indicated that CPI is a weak negative relationship towards the performance of insurance companies. The result implies that consumers prefer to save than spending money during inflation. It was also demonstrated interest rate has an insignificant relationship with the ROA of the insurance company in Malaysia.

Ekelof (2019) evaluated the different macroeconomic variables of inflation, interest rate, and company taxation that affect the MSCI of SMEs in Sweden. The macroeconomic data cover 10 year period, from 2009 to 2019, at a monthly interval. By utilizing the multiple regression model for the analysis, it was identified that the performance of SMEs was affected positively by interest rate and company taxation whereas inflation exhibit an insignificant relationship. It was also demonstrated that the interest rate is stimulating demand and therefore consumption. Regarding inflation factor, Ekelof (2019) explain that SMEs do arise their price based on the fluctuating of inflation.

2.3.3 The Synthesis Remark

As briefly discussed in the Introduction, the cost continues rising issue is much-drawing attention by SMEs due to their scarcity of resources. However, the sequential research of SMEs is most likely to highlight the challenges that are affecting their performance in terms of profitability and productivity. These challenges include a lack of capital financial, skilled employees, existing resources, high competitiveness in a similar industry, and any other related external issues. However, it is argued that the challenges may be irrelevant and possible to measure this issue precisely. In this situation, this phenomenon encountered by SMEs remains unclear, yet, the context of the macroeconomic aspect on this concern is still limited. In this regard, this paper utilizes macroeconomic factors to clarify this issue.

Throughout the empirical review of macroeconomic studies, the relationship between inflation, interest rate, government tax revenue, and SMEs’ performance remains inconclusive (Bekeris, 2012; Ekelof, 2019; Garwe et al., 2010; Halim et al., 2017; Michael & Johannes, 2013; Mujahid et al., 2019; Lilian et al., 2017; Sharmilee & Hoque, 2016). The differences in terms of method analysis, time frame, and contextualize reason may be the concern. Furthermore, an analysis of SMEs in specific the Malaysian context is limited since previous research is pertaining to study the SMEs in general (Halim et al., 2017). In this line, it may limit the understanding of this issue for SMEs in specific. Hence, the current paper tries to fill in the gap by examining the impact of macroeconomic variables on the economic performance of SMEs in the five major sectors beyond this concern in the Malaysian context.

3. Research Methodology

The analysis covers 19 years of SMEs’ performance and macroeconomic yearly from 2000 until 2018. The economic performance of SMEs in five major sectors is measured by gross domestic product collected from the SME Annual Report (Department of Statistic Malaysia). There are three macroeconomic factors selected based on previous studies include inflation, interest rate, and government tax revenue. Among these macroeconomic factors, inflation and interest rate are collected from World Bank Data, whereas government tax revenue is collected from Bloomberg, Universiti Malaysia Sabah. In addition, the data of interest rate presents the lending rate in this study. Meanwhile, the control variable of the unemployment rate refers to the total labor force, and this data is collected from World Bank Data. As the data source of SMEs performance is only available for the years from 2000 until 2018, it is encouraged the macroeconomic data stay with this time frame in this study.
Furthermore, the Autoregressive Distributed Lag (ARDL) Model, Error Correction Model (ECM), and Wald Test are used to analyze the long-run and short-run causal relation between macroeconomic variables and SMEs performance in five sectors separately.

### 3.1 Unit Root Test

The unit root tests are the first step in analyzing the relationship between macroeconomic variables and SMEs’ performance, namely Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests.

### 3.2 Autoregressive Distributed Lag (ARDL) Model

ARDL bound test is a cointegration method to test the long relationship between the dependent and independent variables. The long-run relationship or causal effect between the dependent variable and independent variables detect through the F-Bound test. The estimated F-statistic of the bound test consist of two critical bounds values for a given significance level, namely lower bound and upper bound. The null hypothesis rejects when the value of F-statistics is higher than the critical upper bound. The rejection of the null hypothesis indicates there is a long-run relationship between the SMEs’ performance and macroeconomic factors. On the other hand, if the F-statistics is smaller than the lower critical bound, then the null hypothesis is failed to be rejected and indicates no significant long-run relationship between the variables. However, when F-statistics is between the upper and lower critical bound, then the relationship between the variables is inconclusive or undetermined in the long run. The estimation of the long-run relationship between variables by using the basic ARDL model shown below:

\[
\Delta Y_t = 0 + i = 1 n i \Delta Y_t - i + i = 0 n i \Delta X_t - i + 1 Y_t - 1 + 2 X_t - 1 + t \quad (1)
\]

It refers to the dependent variables, while \( X_t \) refers to independent variables. The short-run dynamics with the lag show as \( i = 1 n i \Delta Y_t - i \). The terms \( i = 0 n i \Delta X_t - i \) shows the short-run relationship between the dependent variable and independent variables. Meanwhile, the long-run relationship shows as \( 1 Y_t - 1 + 2 X_t - 1 \).

### 3.3 Error Correction Model

The short-run relationship is obtained from an Error Correction Model (ECM) as shown in Equation 2 with Error Correction Terms (ECT) show the speed of adjustment for the model to reach equilibrium or long-run relationship. Based on Engle and Granger (1987), the error correction model shows the reaction of the dependent variable to shocks of the regressors or independent variables. It also indicates the proportion or fraction of the disequilibrium from one period that corrects in the next period. Wald test conducts to determine the individual short-run impact between the independent and dependent variables.

\[
\Delta y_t = \alpha + i = 1 \Delta y_t - 1 + i = 0 \Delta x^t - 1 + 1 E C T t - 1 + t \quad (2)
\]

Where \( E C T t - 1 = t - 1 = y_t - 1 - \alpha - \beta x^t - 1 \)

A least-square estimation analyzes the ECM model. The number of lags in the model is determined based on the lowest Akaike Info Criterion (AIC) values. If \( \beta \neq 0 \), then it shows that \( x' \) is significant in influencing \( y \) in the short-run. It implies that there exists a short-run relationship between SME performance and macroeconomic variables.

For the ECT terms, \(-1<\lambda<0\) indicates a significant adjustment of the model towards equilibrium in the long run. Engle and Granger (1987) mentioned that the proportion or percentage of the disequilibrium from one period correct in the next period beyond ECT. The period for the disequilibrium completely corrected is equal to \( 1 \) divided by the value of the ECT coefficient, or \( (1/\lambda) \). Since this research uses
yearly data, then \((1/\lambda)\) shows the number of the year(s) for the model to reach its equilibrium or long-run relationship.

3.4 Diagnostic and Stability Tests

The serial correlation for ARDL and the ECM models will test by the Breusgh-Godfrey serial correlation LM test. The stability of the models examined by using the CUSUM test. Ramsey’s (1969) Regression Specification Error Test (RESET) utilizes to identify whether the models are correctly specified or otherwise. This paper conducted the Breusch-Pagan test to test the presence of heteroskedasticity. The null hypothesis suggests the non-existence of heteroskedasticity.

4.0 Data Analysis and Discussion

4.1 Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root test

The results of Augmented Dickey-Fuller (ADF) show that agriculture, construction, manufacturing, mining and quarrying, service, interest rate, and unemployment rate are stationary at first different except for government tax revenue and inflation is stationary at level. Besides that, the results of the Phillips-Perron (PP) unit root test shows that only the government tax revenue, inflation, and unemployment rate are stationary at a level. Agriculture, construction, manufacturing, mining and quarrying, service, and interest rate are stationary at first different. Therefore, the mixed stationarity of the variables warrants the use of the Autoregressive Distributed Lags (ARDL) bound test in this study.

Table 1. Augmented Dickey-Fuller and Phillips-Perron Unit Root Test Results.

<table>
<thead>
<tr>
<th>Augmented Dickey-Fuller</th>
<th>Phillips-Perron</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level</strong></td>
<td><strong>1st Difference</strong></td>
</tr>
<tr>
<td>Intercept</td>
<td>Trend &amp; Intercept</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.673 **</td>
</tr>
<tr>
<td>(-1.1459)</td>
<td>(-1.9154)</td>
</tr>
<tr>
<td>Construction</td>
<td>0.9655</td>
</tr>
<tr>
<td>(0.2134)</td>
<td>(-1.2595)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.5176</td>
</tr>
<tr>
<td>(-1.4858)</td>
<td>(-2.9125)</td>
</tr>
<tr>
<td>Mining and Quarrying</td>
<td>0.9517</td>
</tr>
<tr>
<td>(0.0489)</td>
<td>(-1.5648)</td>
</tr>
<tr>
<td>Service</td>
<td>0.9961</td>
</tr>
<tr>
<td>(1.1362)</td>
<td>(-1.7583)</td>
</tr>
<tr>
<td>Government Tax Revenue</td>
<td>0.3785</td>
</tr>
<tr>
<td>(-1.7776)</td>
<td>(-3.7937)</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.0009**</td>
</tr>
<tr>
<td>(-5.0702)</td>
<td>(-5.0343)</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>0.1513</td>
</tr>
<tr>
<td>(-2.4165)</td>
<td>(-2.0942)</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>0.1050</td>
</tr>
<tr>
<td>(-2.6324)</td>
<td>(-3.2358)</td>
</tr>
</tbody>
</table>

Notes: *, **, and *** refers to the significant level at 10%, 5%, and 1%. The value inside the parentheses refers to the p-value of the variable.
4.2 ARDL Lag Selection, Long-Run Relationship, and Long-Run Coefficient

The optimal ARDL lags refer to the model that produces the lowest value of AIC. Table 2 below highlighted that all SMEs sectors consist of different lag selections: agriculture (2, 0, 1, 2, 2), construction (1, 1, 2, 2, 2), manufacturing (1, 2, 2, 0), mining and quarrying (2, 2, 2, 1, 2), and service (2, 2, 1, 2). The F-statistics is higher than the upper critical bound at any significance level beyond the Bound test. It indicates that macroeconomic variables are jointly significant in influencing all SME sectors in Malaysia. It means that these variables exhibit a joint long-run causal relation towards all SMEs sectors. By referring to the diagnostic test, it is evident that all models did not show the serial correlation problem. The models are also free from heteroskedasticity beyond the Breusch-Pagan-Godfrey test. However, inflation and interest rate removed from the model for the manufacturing sector and service sector separately. Since both variables presented an insignificant relationship with the SME’s performance and the removal resolves the serial correlation problem in the two models. The Ramsey RESET test suggests that all cointegration models correctly specify. The CUSUM stability test shows that all models are stable against the critical bound of 5 percent significance level.

### Table 2. Long-Run Relationship between SME Sectors’ Performance and Macroeconomic Movement

<table>
<thead>
<tr>
<th>ARDL Lag Selection</th>
<th>Agriculture</th>
<th>Construction</th>
<th>Manufacturing</th>
<th>Mining and Quarrying</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2, 0, 1, 2, 2)</td>
<td>(1, 1, 2, 2, 2)</td>
<td>(1, 2, 2, 0)</td>
<td>(2, 2, 2, 1, 2)</td>
<td>(2, 2, 1, 2)</td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>18.1916***</td>
<td>94.743***</td>
<td>7.8898***</td>
<td>9.7042***</td>
<td>6.1511***</td>
</tr>
</tbody>
</table>

Breusch-Godfrey Serial Correlation LM Test:

| (1) | 0.5869 | 0.1403 | 0.1366 | 0.1378 | 0.0819 | 0.4136 | 0.2248 | 0.3924 |

Breusch-Pagan-Godfrey Heteroskedasticity:

| (11) | 2.4482 | 1.0000 | 0.8219 | 1.0000 | 1.2395 | 0.9217 | 1.0816 | 0.6062 |

Ramsey RESET Test:

| t-statistic | 0.0306 | 0.0314 | 6.50E-05 | 3.0920 | 0.2079 |

| (1) | 0.8696 | 0.8707 | 0.9938 | 0.2208 |

CUSUM Stability Test

| Stable at 5% | Stable at 5% |

Note: *, **, and *** refers to the significance level at 10%, 5%, and 1%.

Table 3 below summarized the long-run coefficient of macroeconomic variables for SME sectors’ performance based on the ARDL lag selection. From this table, it can conclude that macroeconomic variables exhibit a long-run causal relation towards all sectors individually exclude the manufacturing sectors. Referring to the argument made by Fidlizan et al. (2013), the consumer income as the indirect factor that caused the situation to be due to their purchasing power during the increased in overall inflation. It is consistent with the argument of Lilian et al. (2017) and Noraini et al. (2018), where consumers prefer to save money than spending during the inflation period. In addition, as reported by MIDA (2020), the Malaysian government promotes tax incentives for both direct and indirect tax incentives in the form of income tax exemption for a period of five or ten years. The same goes with Lim (2020), Malaysia’s top commercial banks and development financial institutions offer low-interest loan repayment for SMEs. These might explain the situation why government tax revenue and interest rate don't affect the manufacturing sector significantly.

For the agriculture sector, the current paper finds that the interest rate is significant negatively in explaining the performance of the agriculture sector. The results imply that the agriculture industry bears the interest expense for the increased interest rate level. Similar to the findings of Lilian et al. (2017) and Roslina et al. (2010), interest rates play a crucial role in affecting the farm income and it is also identified to have a negative relationship with the SMEs performance where an increase in the said
A macroeconomic factor causes performance of SMEs’ sector to fall. In addition, it explains that the agriculture industry obtains a bank loan to purchase required or necessary fixed assets like equipment to support the existing or new plantation development or redevelopment due to low financial capability, whereby produce better nutrition for the plantation (Oyetade et al., 2016; Anthony, 2012).

Interestingly, the results perfectly explain beyond the demand and supply theory for mining and quarrying, and the service sector. It is consistent with the findings of Bekeri (2012) and Sharmilee & Hoque (2016), it is identified taxes have a strong correlation to affect the performance and growth of SMEs’ sectors. It can be explained by the Good and Services Tax (GST), and the Sales and Services Tax (SST) raise the selling price and decline the quantity demand. In addition, Lilian et al. (2017), Michael & Johannes (2013) and Noraini et al. (2018) agreed that the changes in prices lead-lag to demand desire from customers since they prefer to save than spending money during inflation (Lilian et al., 2017; Noraini et al., 2018).

It’s no surprise that the performance of the construction sector is affected by these macroeconomic factors significantly. Since taxes and inflation might arise cost of raw materials (Halim et al., 2017). The findings are similar to Lilian et al. (2017), where inflation and government tax increase the costs of goods for consumers and expenses for SMEs, thereby reducing sales, profit and divert investment of businesses’ performance. While, the higher lending interest rate or interest expense reduces the taxation after operating income, thereby increasing the overall financial performance. It is also consistent with Ekelof (2019), the interest rate has a positive impact on the sector’s performance due to it stimulates demand based on the market value and therefore consumption.

### Table 3. Long-Run Coefficient of SMEs Sectors.

<table>
<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Construction</th>
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<tbody>
<tr>
<td>Government Tax Revenue</td>
<td>-0.3552</td>
<td>-0.8054***</td>
<td>0.7371</td>
<td>-0.0642***</td>
<td>-2.1274***</td>
</tr>
<tr>
<td>Inflation</td>
<td>-0.1846</td>
<td>-0.7250***</td>
<td>-</td>
<td>-0.0876***</td>
<td>0.8873</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>-0.5490**</td>
<td>0.5237***</td>
<td>2.0780</td>
<td>0.0209</td>
<td>-</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>-2.8099**</td>
<td>-4.5815***</td>
<td>0.2568</td>
<td>-0.3250**</td>
<td>-9.1708***</td>
</tr>
<tr>
<td>Constant</td>
<td>20.9597***</td>
<td>26.8654***</td>
<td>-10.5802</td>
<td>2.2307***</td>
<td>80.8639***</td>
</tr>
</tbody>
</table>

Note: 1. Long-run coefficient of macroeconomic variables for SMEs sectors’ performance analyzed based on the ARDL lag selection.
2. *, **, and *** refers to the significant level at 10%, 5%, and 1%

### 4.4 Short-Run Relationship and Short-Run Adjustment

The Wald test identifies the significance of individual macroeconomic movements toward SMEs sectors’ performance in the short-run by referring to the probability value of the F-Statistics. The analysis shows that all macroeconomic variables exhibit different individual short-run causal relations on each sectors’ performance in Malaysia. Table 4 also summarized majority of sectors indicate a short-run causal relationship by government tax revenue, inflation, and interest rate at a 1% significance level. But, only government tax revenue and inflation show a 5% significance level for the service sector and mining and quarrying sector individually.

### Table 4. Short-Run Relationship between SMEs Sectors’ Performance and Macroeconomic Movement

<table>
<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Construction</th>
<th>Manufacturing</th>
<th>Mining and Quarrying</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Tax Revenue</td>
<td>-</td>
<td>0.0025***</td>
<td>0.0007***</td>
<td>0.0001***</td>
<td>0.0365**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(9.1646)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(7.2578)</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.3228</td>
<td>0.0001***</td>
<td></td>
<td>0.0105**</td>
<td>0.9802</td>
</tr>
<tr>
<td></td>
<td>(0.9776)</td>
<td>(122.3232)</td>
<td></td>
<td>(4.5533)</td>
<td>(0.0006)</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>0.0013***</td>
<td>0.0001***</td>
<td>0.0076***</td>
<td>0.0001***</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(6.6727)</td>
<td>(20.9077)</td>
<td>(4.8755)</td>
<td>(17.8769)</td>
<td></td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>0.0009***</td>
<td>0.0001***</td>
<td></td>
<td>0.0002***</td>
<td>0.1809</td>
</tr>
<tr>
<td></td>
<td>(4.6123)</td>
<td>(116.3201)</td>
<td></td>
<td>(8.5774)</td>
<td>(1.7097)</td>
</tr>
</tbody>
</table>
Note: 1. The short-run relationship between macroeconomic variables and SMEs sectors’ performance is analyzed based on the F-statistics obtained from the Wald test with hypothesis null assumes no causal relationship between variables.
2. The value inside the parentheses refers to the Wald Test F-statistics of the variable.
3. *, **, and *** refer to the significant level at 10%, 5%, and 1%.

The error correction term is significant at a 1 percent significance level. The negative sign on its coefficient indicates the correction of the model into a long-run equilibrium significantly when short-run macroeconomic movements occurred. The coefficient implies that the percentage gap between the actual sectors’ performance and equilibrium performance is closed within estimated years. Table 5 summarized the results of the short-run adjustment for all SMEs sectors. It concluded that the majority of SMEs are relatively slow to adjust their actual performance and equilibrium performance. The service sector is examined the slowest speed of adjustment within three years compared to the manufacturing sector and agriculture sector with 2.6 years and two years respectively. Surprisingly, the mining and quarrying sector and construction sector examine the faster speed of adjustment among other sectors within 1.3 years and 1.2 years separately.

Table 5. Short-Run Adjustment of SMEs Sectors.

<table>
<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Construction</th>
<th>Manufacturing</th>
<th>Mining and Quarrying</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error Correction Term</td>
<td>-0.5252***</td>
<td>-0.8035***</td>
<td>-0.3912***</td>
<td>-0.7426***</td>
<td>-0.3305***</td>
</tr>
</tbody>
</table>

Note: 1. The coefficient for ECT identifies by inserting the lag value of the ECT as one of the independent variables in the Error Correction Model.
2. *, **, and *** refer to the significant level at 10%, 5%, and 1%.

4.5 Residual and Stability Diagnostic

Table 6 below summarized the results of residual and stability diagnostic checks. The Breush-Godfrey LM test indicates that all models are free from serial correlation. The Breush-Pagan test conducted suggests that the model didn’t display heteroskedasticity. The Ramsey RESET test shows that this Error Correction Model (ECM) is correctly specified. Moreover, the CUSUM stability test shows that the model is stable against the critical bound of a 5 percent significance level.

Table 6. Residual and Stability Diagnostics of SMEs Sectors

<table>
<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Construction</th>
<th>Manufacturing</th>
<th>Mining and Quarrying</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breusch-Godfrey Serial Correlation LM Test: F-statistic</td>
<td>0.5869</td>
<td>0.3066</td>
<td>1.0418</td>
<td>0.0819</td>
<td>0.2248</td>
</tr>
<tr>
<td>Prob. Chi-Square</td>
<td>0.1403</td>
<td>0.1361</td>
<td>0.1378</td>
<td>0.4136</td>
<td>0.3924</td>
</tr>
<tr>
<td>Breusch-Pagan-Godfrey Heteroskedasticity: F-statistic</td>
<td>2.4482</td>
<td>0.8219</td>
<td>1.2395</td>
<td>1.0816</td>
<td>0.6062</td>
</tr>
<tr>
<td>Prob. Chi-Square</td>
<td>1.0000</td>
<td>1.000</td>
<td>0.9217</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>Ramsey RESET Test: F-statistic</td>
<td>0.0306</td>
<td>0.0314</td>
<td>6.50E-05</td>
<td>3.0920</td>
<td>0.2079</td>
</tr>
<tr>
<td>t-statistic</td>
<td>0.8696</td>
<td>0.8707</td>
<td>0.9938</td>
<td>0.2208</td>
<td>0.6675</td>
</tr>
<tr>
<td>CUSUM Stability Test</td>
<td>Stable at 5%</td>
<td>Stable at 5%</td>
<td>Stable at 5%</td>
<td>Stable at 5%</td>
<td>Stable at 5%</td>
</tr>
</tbody>
</table>

5.0 Conclusion

This study aims to examine the impact of macroeconomic variables on the economic performance of Malaysian SMEs. Based on the results found, the relationship between variables is consistent with the Keynesian Economic Theory. This paper employed the ARDL model and found that all macroeconomic variables exhibit a joint long-run relationship toward all SMEs sectors’ performance. At the same time, there is the different long-run impact of macroeconomic variables on SMEs’ sectors performance individually. The error correction modelling indicates that macroeconomic variables exhibit various
individually short-run relationships on each sectors’ performance in Malaysia. Therefore, it concluded that all macroeconomic variables consist of long-run and individually short-run causal effects toward the economic performance of the five SMEs sectors in Malaysian. It is beneficial for policymakers. They might consider lowering the tax rate or offer a tax exemption program to encourage more business activities among SMEs. Thereby, arise the GDP contribution to the national economy. For the business owner, these analysis results might provide a strategy guideline in dealing with the economic changes. This paper is without any limitation. This study is only examined 19 years of SME performance due to the nature of the publication of the National Entrepreneur and SME Development Council (NESDC). In this situation, the analysis outputs are limited since the results may not match the real-time sources of macroeconomic data. Last but not least, several analyses can include in future work. First, the granger causal effect between the performance of five sectors of SMEs and macroeconomic factors is suggested in future research to further explore the granger effect among themselves. Second, the panel analysis on the SMEs among ASEAN-5 is recommended for further investigation in understanding this phenomenon in a broader perspective. In addition, it is also interesting to focus the managerial strategies on the business performance during the unexpected economic situation by considering a mixed-method approach in future studies to provide richer information in this concern.

6.0 References


THE INTERACTION BETWEEN GOLD PRICE AND FTSE KLCI PRICE IN MALAYSIA

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ABSTRACT

This paper intends to study the interaction between FTSE KLCI price and gold price in Malaysia. It is found that there is cointegration relationship between log FTSE KLCI return and log gold return. Besides that, log gold return Granger cause log FTSE KLCI return which suggest the inclusion of both investments in a same portfolio. This is proposed so that to have the benefit of diversification to reduce investment risk. If a rise in gold return leads to a fall in FTSE KLCI return, then the two investments can be the substitute to each other. If a rise in gold return leads to a rise in FTSE KLCI return, the two investments can be complements.

Keywords: Gold price, FTSE KLCI price, unit root tests, cointegration test, Granger causality

1. Introduction

There are different types of investments including stock market and commodity market like gold. Stock market is a long-term investment which generate dividend and capital gain in returns. Gold investment is for hedging against inflation, diversification of portfolio, and as a safe haven during economic crisis and downturn (Hlupo, 2017). Therefore, investing in gold can be a substitute for investing in stock market. This paper intends to study the interaction between FTSE KLCI price and gold price in Malaysia.

The remainder of this paper is as follows. Literature review is presented in Section 2, data and methodology is in Section 3, estimated results are reported and discussed in Section 4, Section 5 is conclusion.

2. Literature Review

There are a number of studies on stock market and gold price. Singh and Nadda (2013) used the data of National Stock Exchange Index value and the spot price of gold to analyse Standard Deviation or volatility and Compounded Annual Growth Rate or annual growth. The Standard Deviation of the index value was 37.02 higher than that of gold price which was 11.80, indicating that the volatility and thus the risk of the stock market index value was higher than that of gold price. The annual growth of the index value was 13.47% per annum lower than that of gold price which was 21.85% per annum.

Mukhuti and Bhunia (2013) studied the linkages between Sensex and Nifty index prices and gold price using bivariate and multivariate cointegration tests. The bivariate cointegration test indicated no cointegration between the variables. The results of multivariate cointegration test indicated a long-run relationship between the variables. Yıldız Contuk et al. (2013) found that there was an ARCH effect in ISE 100 index price and gold price, thus a MGARCH modelling was used. The study obtained the
results that stock exchange and gold yields were affected by their own shocks and by shocks of each other.

Gokmenoglu and Fazlollahi (2015) analysed the long-run relationship of gold price, oil price, gold price volatility index, oil price volatility index, and S&P500 index price. It was found a strong negative correlation between S&P500 index price and gold price. The estimated ARDL result indicated that the variables were integrated and therefore there was a long-run relationship among them. The estimated coefficients indicated that 1% increase in oil price led to 18% decrease in S&P500 index price, 1% increase in gold price led to 74% of S&P500 index price, 1% increase in oil price volatility led to 6.3% decrease in S&P500 index price, and 1% increase in gold price volatility led to 8.7% in S&P500 index price. Granger causality test showed the results indicating unidirectional causalities from oil price to S&P500 index price, and from oil price to gold price, bilateral causalities between gold price and S&P 500 index price, between oil price volatility and S&P500 index price, and between oil price volatility and gold price volatility.

Raza et al. (2016) investigated the asymmetry impacts for short-run and long-run of Brent crude oil price, gold price, and their volatilities on several emerging markets including Russia, Brazil, Mexico, Chile, China, South Africa, India, Indonesia, Malaysia, and Thailand using non-linear ARDL. It was found that there was a positive impact of oil price on large BRICS stock markets. Besides that, there was a negative impact of oil price volatility on several stock markets namely Brazil, India and Thailand. It was found a positive impact of gold price on the stock markets. However, gold price volatility had a negative impact on the stock markets. For long-run, both the volatilities of oil price and gold price had negative impacts on the stock markets.

Arfaoui and Rejeb (2017) indicated a negative relation between changes in MSCI world stock market index and oil price. Besides that, it was found that gold price and US dollar exchange rate can affect oil price. In addition, changes in MSCI world stock market index, US dollar exchange rate, and oil price can affect gold price. Hlupo (2017) studied the linkages between the equities on the Zimbabwe Stock Exchange and gold price. The results showed a weak unidirectional relationship running from gold price to the stocks of gold mining firms in the short-run. Al-Ameer et al. (2018) investigated the relationship between HDAX index price of the Frankfurt Stock Exchange and gold price. It was found that there was a moderate positive correlation between the variables for a twelve-years period. Besides that, there was a cointegration relationship between the variables. Bhuyan and Dash (2018) indicated a long-run relationship between NSE Nifty return and gold return through Johansen cointegration test. The study found no Granger causality between the variables.

3. Data and Method

3.1 Data
This study used the FTSE KLCI price monthly data and gold price US dollar per troy ounce monthly data. Both data are obtained from the Bloomberg database. The data covers the period from 31/1/1980 until 31/3/2021. Data are converted into logarithmic differences because the data are lognormal distribution instead of standard normal distribution.

3.2 Method
The use of unit root test is to test for a unit root or non-stationarity in a series. If there is a unit root in a series, the series is I(1). If the series is stationary, the series is I(0). We used Augmented Dickey-Fuller (ADF, 1979), Phillips-Perron (PP, 1988) and Zivot-Andrews unit root tests to examine whether the time series are stationary and so ready to be used in the cointegration test. If the probability value or P>0.05, the null hypothesis of the time series data has a unit root or non-stationary is accepted. If P<0.05, the null hypothesis is rejected.
Once the gold price and FTSE KLCI price series are stationary at the first difference, the data are ready converted into logarithmic differences. The Johansen cointegration test is used to test if there is any long-run relationship between log FTSE KLCI return and log gold return. The null hypothesis of there is zero cointegration equation is accepted if P>0.05. The null hypothesis is rejected if the P<0.05.

Using the Granger causality test is to examine whether there is a cause and effect relationship between the variables log gold return and log FTSE KLCI return. If P>0.05, the null hypothesis of there is no cause and effect that is, granger causality, between the two variables is accepted. If P<0.05, the null hypothesis is rejected and there is a cause and effect relationship between the two variables.

4.0 Results

3.1 Descriptive Statistics
Table 1 summarized the descriptive statistics for gold price and FTSE KLCI price monthly data for the period 31/1/1980 until 31/3/2021. The mean value of gold price is 694.18 while the mean value of FTSE KLCI price is 944.05. Gold price have the maximum and minimum values of 1975.8 and 255.68. Its standard deviation is 467.42. FTSE KLCI have maximum and minimum values of 1882.7 and 171.72. Its standard deviation is 514.84. Gold price has skewness 0.9987 while FTSE KLCI price has skewness 0.3186. The distributions of both series are flatter to the right and have longer right tails. Gold price has kurtosis 2.5566 while FTSE KLCI has kurtosis 1.7651, thus the distributions of both series are platykurtic. Jarque-Bera test has null hypothesis skewness being zero and excess kurtosis being zero. The probability-value (P-value) of the Jarque-Bera test for gold price series is 0.0000 as well as the FTSE KLCI price series. The null hypothesis of the Jarque-Bera test can be rejected, indicating that both series are not normal distributions.

<table>
<thead>
<tr>
<th>Table 1: Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOLD</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Std. Dev.</td>
</tr>
<tr>
<td>Skewness</td>
</tr>
<tr>
<td>Kurtosis</td>
</tr>
<tr>
<td>Jarque-Bera</td>
</tr>
<tr>
<td>Probability (P)</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

3.2 Unit Root Tests
As reported in Table 2 and Table 3, the results of both ADF and PP unit root tests indicate each log gold series and log FTSE KLCI series has a unit root or nonstationary at level. Both series become stationary at first difference. The results are highly significant at the 1% level. This allows us to carry out cointegration test.
Table 2: Results of ADF Unit Root Test

<table>
<thead>
<tr>
<th></th>
<th>At Level</th>
<th>LFTSE</th>
<th>LGOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Constant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t-Statistic</td>
<td>Prob.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-1.8804</td>
<td>0.3416</td>
<td>0.9090</td>
</tr>
<tr>
<td></td>
<td>-2.8726</td>
<td>0.1724</td>
<td>0.4116</td>
</tr>
<tr>
<td></td>
<td>0.9201</td>
<td>0.9048</td>
<td>0.9294</td>
</tr>
<tr>
<td>Without Constant &amp; Trend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t-Statistic</td>
<td>Prob.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-2.1587</td>
<td>0.0634</td>
<td>0.9950</td>
</tr>
<tr>
<td></td>
<td>-2.9880</td>
<td>0.0307</td>
<td>0.9976</td>
</tr>
<tr>
<td></td>
<td>0.9294</td>
<td>0.9022</td>
<td>0.9326</td>
</tr>
</tbody>
</table>

At First Difference d(LFTSE) D(GOLD)

|                      |          |        |       |
| With Constant        |          |        |       |
|                      | t-Statistic | Prob.  |       |
|                      | -19.2005 | 0.0000 | 0.0000 |
|                      | -24.1199 | 0.0000 | 0.0000 |
|                      | 0.0000   | 0.0000 | 0.0000 |
| Without Constant & Trend |          |        |       |
|                      | t-Statistic | Prob.  |       |
|                      | -19.3421 | 0.0000 | 0.0000 |
|                      | -24.2434 | 0.0000 | 0.0000 |
|                      | 0.0000   | 0.0000 | 0.0000 |

Table 3: Results of PP Unit Root Test

<table>
<thead>
<tr>
<th></th>
<th>At Level</th>
<th>LFTSE</th>
<th>LGOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Constant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t-Statistic</td>
<td>Prob.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-1.8330</td>
<td>0.3643</td>
<td>0.9585</td>
</tr>
<tr>
<td></td>
<td>-3.3131</td>
<td>0.0653*</td>
<td>0.4034</td>
</tr>
<tr>
<td></td>
<td>0.8941</td>
<td>0.9007</td>
<td>0.8833</td>
</tr>
<tr>
<td>Without Constant &amp; Trend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t-Statistic</td>
<td>Prob.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-12.7781</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>-24.0632</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

At First Difference d(LFTSE) D(GOLD)

|                      |          |        |       |
| With Constant        |          |        |       |
|                      | t-Statistic | Prob.  |       |
|                      | -12.7779 | 0.0000 | 0.0000 |
|                      | -24.2434 | 0.0000 | 0.0000 |
|                      | 0.0000   | 0.0000 | 0.0000 |
| Without Constant & Trend |          |        |       |
|                      | t-Statistic | Prob.  |       |
|                      | -12.7315 | 0.0000 | 0.0000 |
|                      | -24.0438 | 0.0000 | 0.0000 |
|                      | 0.0000   | 0.0000 | 0.0000 |

Notes: ***Denotes 1% significance level, **denotes 5% significance level, and * denotes 10% significance level.


The estimation results of Zivot-Andrews unit root test are shown in Table 4. The p<0.01 can reject the null hypothesis the series has a unit root with a structural break in both the intercept and trend, for both log FTSE KLCI series and log gold series.

Table 4: Results of Zivot-Andrews Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>t-statistic</th>
<th>Break year</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log FTSE KLCI</td>
<td>-4.405075</td>
<td>Year 1987 Month 12</td>
<td>0.001673***</td>
</tr>
<tr>
<td>Log gold</td>
<td>-3.742111</td>
<td>Year 2005 Month 09</td>
<td>0.000537***</td>
</tr>
</tbody>
</table>

***Denotes rejection of the null hypothesis at the 1% level.

3.3 Cointegration Test

The long-run association between log FTSE KLCI return and log gold return is tested using Johansen cointegration test. Table 5a shows the results of trace test which can reject the null hypothesis there is zero cointegration as well as the hypothesis there is at most 1 cointegration, as indicated by p-value...
<0.05. The results are confirmed by the maximum eigenvalue results as in Table 5b. The null hypothesis there is zero cointegration can be rejected with p-value <0.1, and the hypothesis there is at most 1 cointegration can be rejected as indicated by p-value <0.05.

Table 5a: Results of Unrestricted Cointegration Rank Test (Trace)

<table>
<thead>
<tr>
<th>Hypothesized</th>
<th>No. of CE(s)</th>
<th>Eigen value</th>
<th>Trace Statistic</th>
<th>Critical Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None**</td>
<td>0.031767</td>
<td>19.79402</td>
<td>18.39771</td>
<td>0.0317**</td>
<td></td>
</tr>
<tr>
<td>At most 1**</td>
<td>0.008080</td>
<td>3.975500</td>
<td>3.841465</td>
<td>0.0462**</td>
<td></td>
</tr>
</tbody>
</table>

Trace test indicates 2 cointegrating equation(s) at the 5% level.
** Denotes rejection of the hypothesis at the 5% level.

Table 5b: Results of Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

<table>
<thead>
<tr>
<th>Hypothesized</th>
<th>No. of CE(s)</th>
<th>Eigen value</th>
<th>Max-Eigen Statistic</th>
<th>Critical Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>0.031767</td>
<td>15.81852</td>
<td>17.14769</td>
<td>0.0772*</td>
<td></td>
</tr>
<tr>
<td>At most 1**</td>
<td>0.008080</td>
<td>3.975500</td>
<td>3.841465</td>
<td>0.0462**</td>
<td></td>
</tr>
</tbody>
</table>

** Denotes rejection of the null hypothesis at the 5% level, and * denotes rejection of the null hypothesis at the 10% level.

3.4 Granger Causality
As depicted by the results in Table 6, the null hypothesis log gold return does not Granger cause log FTSE KLCI return can be rejected and it is significant at 5% level. This means that log gold return granger cause log FTSE KLCI return. However, the results show that log FTSE return does not Granger cause log gold return.

Table 6: Results of Granger Causality Test

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LGOLD does not Granger Cause LFTSE</td>
<td>494</td>
<td>4.70400</td>
<td>0.0306**</td>
</tr>
<tr>
<td>LFTSE does not Granger Cause LGOLD</td>
<td>1.80055</td>
<td>0.1803</td>
<td></td>
</tr>
</tbody>
</table>

** Denotes 5% significance level.

5.0 Conclusion
This paper intends to study the association between FTSE KLCI price and gold price in Malaysia. The stationarities of the series are tested using unit root tests. Johansen cointegration test is used to test the long-run relationship between the variables. The direction(s) of causality between the variables is tested using Granger causality test. The distributions of the series are not normal and the series are I(1). The data series are transformed into log returns. We found long-run cointegration relationship between log gold return and log FTSE KLCI return. In the last step, we used Granger causality to test for the cause and effect between the variables. Our study found Granger causality from log gold return to log FTSE KLCI return, therefore we suggest gold and stock investments can be considered for inclusion in a same portfolio. This can result in portfolio diversification to reduce investment risk. An increase in gold return may cause a decline in FTSE KLCI return, then the two investments can be the substitute to each other. An increase in gold return may also cause an increase in FTSE KLCI return. Therefore, the two investments can be complements.
References


BEKERJA DARI RUMAH (BDR): PROFIL DAN PRESTASI PEKERJA SEMASA COVID-19

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ABSTRAK


Kata Kunci: COVID-19, Bekerja Dari Rumah (BDR), profil pekerja, prestasi kerja
Penghargaan


1. Pengenalan

Penyebaran virus Corona yang dikenali sebagai COVID-19 tidak hanya berisiko kepada mereka yang berada dalam perkhidmatan kesihatan, tetapi juga di kalangan pekerja pelbagai sektor dan masyarakat umum secara keseluruhannya. Kerajaan tiada mempunyai pilihan lain melainkan mengenakan Perintah Kawalan Pergerakan (PKP) bagi menekan penularan COVID-19 dari terus meningkat.


Di Malaysia, pengaturan kerja yang fleksibel bukanlah perkara baru. Kementerian Pembangunan Wanita dan Keluarga di Malaysia mengambil inisiatif untuk memperkenalkan tiga cara kerja yang fleksibel pada tahun 2015 termasuk: (1) bekerja dari rumah; (2) waktu kerja fleksibel; dan (3) modifikasi minggu kerja termampat (Lim 2017). Di sektor swasta, pengaturan kerja fleksibel masih terhad dan biasanya dipraktikkan oleh syarikat multinasional, institusi pendidikan dan beberapa syarikat kecil milik asing (Subramaniam & Selvaratnam 2010). Inisiatif pengaturan kerja fleksibel ini sebahagiannya adalah untuk mendorong dan memudahkan penyertaan wanita ke pasaran buruh (Lim 2017).


2. Kajian Literatur

pada tahap prestasi pekerja secara individu dan dapat menyediakan kaedah untuk menggabungkan beban kerja dan keluarga dengan lebih baik (Hofäcker & König, 2013) untuk mencapai keseimbangan kerja-kehidupan (Lakshmi, Nigam, & Mishra, 2017). Di peringkat masyarakat, BDR dapat dikaitkan dengan pengurangan kesesakan lalu lintas dan pengurangan pencemaran udara (Giovanis, 2019).

Walaupun terdapat peningkatan jumlah literatur tentang BDR mengenai impaknya dengan teknologi yang semakin meningkat sehingga mengakibatkan perubahan dengan pelbagai pilihan mengenai cara orang bekerja hari ini, namun, masih terdapat kekurangan kajian tentang impak BDR kepada pekerja semasa menghadapi krisis seperti pandemik COVID-19. Terdapat bukti bahawa pelbagai jenis pengaturan kerja fleksibel telah diadapkt sebagai bentuk kesinambungan kerja dalam peristiwa krisis kewangan dunia (Dietz et al., 2011), pandemik atau wabak (Blake, Blendon, & Viswanath, 2010), atau bencana alam (Donnelly & Proctor-Thomson, 2015).

Pelaksanaan pengaturan kerja fleksibel melalui pengurangan waktu kerja dan perubahan dalam cara pekerjaan dilihat sebagai langkah untuk mengatasi krisis kewangan 2009 (Dietz et al, 2011). Banyak negara telah melaksanakan pengaturan kerja fleksibel yang membolehkan pekerja untuk bekerja dari rumah sebagai bentuk kesinambungan kerja pada masa krisis, di mana kesannya terhadap prestasi masih kurang didokumentasikan dalam kajian literatur.


3. Kaedah Kajian


4. Keputusan Kajian

Keputusan kajian ini adalah berdasarkan kepada objektif kajian dan ujian deskriptif sahaja dan semua 194 soal selidik yang dikenali kepada adalah digunakan. Ringkasan lengkap profil responden dan min prestasi kerja ditunjukkan dalam Jadual 1.0.
Jadual 1.0 menunjukkan, hasil kutipan data sebanyak 194 soal selidik telah dapat di analisis iaitu 75.77 peratus adalah responden dari daerah Tawau, manakala 25.26 peratus adalah responden dari daerah Semporna. Berdasarkan min prestasi, responden dari daerah Tawau berpendapat bahawa prestasi kerja mereka semasa BDR adalah hampir sangat tinggi (min 4.49) manakala responden dari Daerah Semporna prestasi mereka semasa BDR adalah tinggi (min 3.99). Ini bermakna terdapat perbezaan sedikit dari segi pendapat mengenai prestasi mereka semasa BDR di antara dua daerah.

Berdasarkan sampel yang dikumpulkan melalui pengedaran soal selidik, responden wanita (52.58 peratus) sedikit melebihi responden lelaki (47.42). Dari segi purata atau min prestasi kerja antara lelaki (min 4.41) dan wanita (min 4.06) tidak banyak berbeza di mana kedua-dua gender berpendapat hampir sama iaitu prestasi kerja mereka semasa BDR adalah melebihi 4.00 yang mana mereka tetap berprestasi tinggi.

Sebilangan besar responden adalah dari kumpulan umur 21 hingga 35 tahun (42.27 peratus) dan bagi responden dalam lingkungan 36 tahun hingga 45 tahun adalah sekitar 32.47 peratus. Manakala responden yang berumur dalam lingkungan 46 hingga 60 tahun adalah sebanyak 25.26 peratus.

<table>
<thead>
<tr>
<th>Profil</th>
<th>Kekerapan (Bilangan)</th>
<th>Peratus (%)</th>
<th>Min Prestasi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daerah</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tawau</td>
<td>147</td>
<td>75.77</td>
<td>4.49</td>
</tr>
<tr>
<td>Semporna</td>
<td>47</td>
<td>24.23</td>
<td>3.99</td>
</tr>
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<td><strong>Gender</strong></td>
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<td></td>
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<tr>
<td>Lelaki</td>
<td>92</td>
<td>47.42</td>
<td>4.41</td>
</tr>
<tr>
<td>Wanita</td>
<td>102</td>
<td>52.58</td>
<td>4.06</td>
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<tr>
<td>21 - 35 tahun</td>
<td>82</td>
<td>42.27</td>
<td>4.46</td>
</tr>
<tr>
<td>36 - 45 tahun</td>
<td>63</td>
<td>32.47</td>
<td>4.18</td>
</tr>
<tr>
<td>46 - 60 tahun</td>
<td>49</td>
<td>25.26</td>
<td>3.99</td>
</tr>
<tr>
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<tr>
<td>Bujang</td>
<td>87</td>
<td>44.85</td>
<td>4.45</td>
</tr>
<tr>
<td>Berkahwin</td>
<td>107</td>
<td>55.15</td>
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<td>Profesional</td>
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<td>26.29</td>
<td>4.42</td>
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<tr>
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<td>73.71</td>
<td>4.14</td>
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<tr>
<td>Luar Bandar</td>
<td>104</td>
<td>53.61</td>
<td>3.96</td>
</tr>
<tr>
<td>Bandar</td>
<td>90</td>
<td>46.39</td>
<td>4.51</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Tiada Anak</td>
<td>95</td>
<td>48.97</td>
<td>4.45</td>
</tr>
<tr>
<td>Ada Anak</td>
<td>99</td>
<td>51.03</td>
<td>4.06</td>
</tr>
<tr>
<td><strong>Pengalaman Kerja</strong></td>
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<tr>
<td>Kurang 10 tahun</td>
<td>88</td>
<td>45.36</td>
<td>4.12</td>
</tr>
<tr>
<td>11-15 tahun</td>
<td>67</td>
<td>34.54</td>
<td>4.46</td>
</tr>
<tr>
<td>16 tahun ke atas</td>
<td>39</td>
<td>20.10</td>
<td>4.17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>194</strong></td>
<td><strong>100.00</strong></td>
<td><strong>4.24</strong></td>
</tr>
</tbody>
</table>
Responden yang berumur antara 36 hingga 45 tahun (min 4.18) dan 46 hingga 60 (min 3.99) berpendapat prestasi mereka adalah tinggi walaupun BDR. Manakala, bagi golongan muda berumur 21 hingga 35 tahun beranggapan prestasi kerja mereka adalah sangat tinggi semasa BDR (min 4.46).

Dari segi status perkahwinan, majoriti responden sudah berkahwin (55.15 peratus), manakala 44.85 peratus responden masih bujang. Golongan responden yang masih bujang beranggapan bahwa prestasi kerja mereka amat tinggi (min 4.45) semasa BDR. Bagi golongan responden yang telah berkahwin pula prestasi kerja mereka juga adalah tinggi iaitu pada min 4.09. Ini bermakna terdapat sedikit perbezaan di antara responden yang belum berkahwin dan telah berkahwin dari segi prestasi kerja semasa BDR.

Bagi jenis jawatan atau pekerjaan, majoriti responden adalah kakitangan kerajaan perkhidmatan bukan professional iaitu sebanyak 73.71 peratus manakala selebihnya adalah kakitangan kerajaan dalam perkhidmatan professional iaitu sebanyak 26.29 peratus. Bagi golongan perkhidmatan professional persepsi terhadap prestasi kerja mereka adalah tinggi iaitu min 4.14. Manakala bagi bukan professional adalah tinggi juga iaitu min 4.42 dan menghampiri prestasi yang sangat tinggi.

Berdasarkan tempat tinggal sama ada responden tinggal di kawasan bandar atau luar bandar, sebanyak 46.39 peratus tinggal di Kawasan bandar. Manakala, 53.61 peratus tinggal di Kawasan luar bandar. Pandangan responden yang tinggal di bandar (min 4.51) terhadap prestasi kerja semasa BDR adalah lebih tinggi berbanding luar bandar (min 3.96).

Sebanyak 51.03 peratus responden mempunyai anak sekurang-kurangnya seorang dan selebihnya iaitu 48.97 peratus responden tidak mempunyai anak termasuk mereka yang masih belum berkahwin. Min pepsepsi prestasi kerja bagi golongan yang tidak mempunyai anak adalah sangat tinggi (min 4.45). Manakala bagi yang mempunyai anak juga berpendapat prestasi kerja mereka adalah tinggi (min 4.06). Bagi profil pengalaman kerja responden, 45.36 peratus adalah responden yang mempunyai pengalaman kerja selama kurang dari 10 tahun, 34.54 peratus adalah responden yang mempunyai pengalaman kerja selama 11 hingga 15 tahun dan selebihnya iaitu 20.10 peratus adalah responden yang mempunyai pengalaman kerja 16 tahun dan ke atas. Responden yang memiliki pengalaman kerja selama kurang dari 10 tahun (min 4.12) dan 16 tahun ke atas (min 4.17) berpendapat bahawa prestasi kerja semasa BDR mereka adalah tinggi. Manakala bagi mereka yang mempunyai pengalaman selama 11 hingga 15 tahun berpendapat prestasi kerja semasa BDR adalah sangat tinggi (min 4.46).

5. Kesimpulan

sebagai kajian rintis sahaja. Kajian ini mencadangkan agar faktor demografi dalam perbezaan prestasi BDR dalam diperluaskan dari segi skop kajian dan dalam pelbagai industri.

**Penghargaan**


**References**


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EMPLOYMENT OF YOUTH IN MALAYSIA DURING COVID-19 PANDEMIC

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ABSTRACT

The unemployment of youth is an important issue which always highlighted and reviewed by the Malaysian government. Although the national unemployment rate is low every year, the youth unemployment rate was recorded at a two-digit figure every year. The COVID-19 pandemic had further increased the youth unemployment recently. The Malaysian government had provided initiatives and incentives under economic plans and packages such as PRIHATIN, PENJANA, National Budget 2021 and PEMULIH, to assist the youths in tackling youth unemployment during the pandemic crisis. There are initiatives can be taken by youths to get themselves employed such as learning new skills to increase employability, engage in place and train programme, become entrepreneurs, engage in e-commerce to become self-employed during the pandemic crisis.

Keywords: COVID-19, youth unemployment, government initiatives

1. Introduction

The employment of youth population has always been an important issue to be addressed or studied, as the young generations are the future of a community or a nation. According to International Labour Organization (ILO) (2019; 2020), the youth population especially those who aged between 15 and 24 years old are three times more likely to be unemployed compared to the adult population which aged from 25 years old and above.

Youths who are unemployed are unable to gain job experience which will enhance their future employability (ILO, 2020a). It is essential that youths gain employment so that they able to gain work experience and improve their competencies. Governments around the world prioritize efforts and policies to address the unemployment of youth as increasing youth unemployment would have negative implications towards a nation’s economic (ILMIA, 2017).

There has been an increasing trend in the youth unemployment rate since the past few decades. According to ILO (2015) and Ayhan (2016), the global youth unemployment rate was recorded at 12.2% in year 1995 and it increased to 13.1% in year 2015. At year 2019, the youth unemployment was recorded at 13.6% and expected to increase during year 2020 and 2021. Although it was not expected to increase with a vast amount, the youth unemployment is still 3 times more than the global unemployment rate.

The issue of youth unemployment has become more serious due to the widespread of COVID-19 pandemic during year 2020. According to Blustein et al. (2020), the pandemic results in major dislocation of youth from labour market for some time due to vast increases in unemployment caused by the COVID-19 economic crisis. The youth unemployment rate had risen during the COVID-19 pandemic crisis worldwide, for instance the youth unemployment rate of USA increased from 8.1% during December 2019 to 25% during May 2020 (Inanc, 2020), youth unemployment rates increasing in the countries in Asia and the Pacific (ILO & ADB, 2020). Survey revealed that one out six youths had been unemployed since the outbreak of the COVID-19 crisis (ILO, 2020b).
2. Statistics of Malaysia’s Youth Unemployment

The unemployment of youth is also an important issue to be reviewed by the Malaysian government. Despite having a low national unemployment rate every year, Malaysia is one of the regional economies recorded a double digits of youth unemployment rate every year (Dian Hikmah Mohd Ibrahim, & Mohd Zaidi Mahyuddin, 2016). As of year 2019, Malaysia’s youth unemployment rate was recorded at 10.52%, more than 3 times higher than the national unemployment rate of 3.26% for the year. The Youth and Sports Minister, YB Syed Saddiq Abdul Rahman, highlighted that the newly elected government were viewing youth unemployment seriously and a special committee will be established to resolve the said issue and ensure that quality jobs are to be provided to the youths (Husna Alias & Meor Riduwan Meor Ahmad, 2018).

The outbreak of COVID-19 pandemic during year 2020 also affected the youth unemployment rate of Malaysia. Before the outbreak, the youth unemployment rate of Malaysia was recorded at the range of 10.46% to 10.92% from year 2015 to 2019, where the lowest (10.46%) was recorded during year 2016 while the highest (10.92%) was recorded during year 2018. After the outbreak, the youth unemployment rate was on an increasing rate every month and recorded at 13.2% at the end of year 2020. As of January 2021, the youth unemployment rate was further increased to 13.5% (Department of Statistics Malaysia, 2021a). For the age group of 15-30 years old, the unemployment rate was recorded at 6.7% during year 2019 and increased to 8.7% in year 2020, then further increased to 9.7% in January 2021. The most recent youth unemployment rate for youth as of July 2021 was recorded at 13.7% for youth aged 15-24 years old, 8.5% for youth aged 15-30 years old (Department of Statistics Malaysia, 2021d).

The increase of youth unemployment rate in Malaysia during year 2020 could be contributed by the enforcement of movement control order (MCO) introduced by the government since March 2020. During the early stages of MCO, only industries involved in the essential services are allowed to operate, thus affecting the working hours and revenue of the businesses. Business activities temporarily halted and some of them had to undergo the closure as the COVID-19 pandemic had changed the landscape of economic and social in the country, causing individuals to lose jobs and sources of income (Department of Statistics Malaysia, 2021b).

Besides unemployment on youth in general, the unemployment of graduates also increased during year 2020. As the implementation of MCO during year 2020, the amount of job losses increased which led to the 718,100 individuals to be unemployed during the year, which is an increase of 200,000 unemployed individual (Department of Statistics Malaysia, 2021c). The unemployment rate of graduates increased from 3.9% in year 2019 to 4.4% in year 2020. During the pandemic period, graduates faced more challenges and competition in getting new jobs compare to before pandemic period, as they need to compete with the unemployed individuals who lost their jobs during the pandemic.

3. The Negative Impact of Youth Unemployment

Youth unemployment is an important issue to be addressed by governments globally as unemployment of the youth has negative impact towards the economy of a nation. The issue of unemployment and economy was first addressed and discus in the 1960s, and since then the discussion of unemployment and economy has come to be known as Okun’s Law (Okun, 1962; Dankumo et al., 2019). Employment leads to the production of economic output, also can be known as gross domestic product (GDP). As employment is the difference between the production output and unemployment, therefore the negative relationship between unemployment and output exists (Dankumo et al., 2019). Okun’s Law estimated that in short run, the unemployment rate decreases by 1% for every 3% increase in the real gross domestic product (Case et al., 2009; Sadiku et al., 2015).

Youth unemployment have negative economic implication due to the reason that they are unable to contribute effectively towards the national economic development. According to ILMIA (2017), youth
is the important stage of economic life as their propensity to consume is the largest. If youths are unemployed, they are unable to contribute effectively to the consumption and paying tax to the government. When there is increase in unemployment, the government will bear extra burden of borrowing because of the decline in productivity and the decline in goods and services consumed (Michael & Geetha, 2020).

Youth unemployment also have livelong effect towards the income and employment stability of the affected person. Being unemployed in youth will caused them exposed to the labour market and employment environment later compared to other person in the similar age category with them, having a weaker credentials in their early career, and display lower resilience and confidence to deal with opportunities in the labour market (ILMIA, 2017). Study from Cruces et al. (2012) showed that unemployment during youth will have effect on the labour market outcomes of adult, where the increase in youth unemployment will lead to the increase in adult unemployment rate. The longer the youth stayed unemployed, the more difficult they will get employed in the future (Cockx & Picchio, 2011).

4. Government’s Initiatives on Tackling Youth Unemployment

The Malaysian government had announced a few policies and initiatives to reduce the unemployment arises from the COVID-19 pandemic or safeguard the employment of Malaysians during the pandemic. One of the initiatives is the introducing the Wage Subsidy Programme (Programme Subsidi Upah or PSU). The programme was announced in March 2020 by the Prime Minister at the time, Tan Sri Muhyiddin Yassin under the PRIHATIN economic stimulus package (Huong, 2021). PSU is a financial assistance programme paid to employers for all local employees earning RM4,000 or less, where the employers will be paid RM600 – RM1,200 per employee per month for 3 months, depending on the size of the enterprises (PERKESO, 2020). The programme aims to support businesses that was affected by the economic impact of the pandemic, at the same time prevent employees losing their current jobs and source of income, due to the condition that the PSU receiver are not allowed to retrench any employees that earns RM4,000 or less per month for at least 6 months. The programme was further extended and still in effect under the latest PEMULIH package (PERKESO, 2021).

Under the National Economic Recovery Plan (PENJANA), the government introduced Hiring Incentive and Training Program with the objective to encourage employers to hire the unemployed by providing financial incentives to the employers, expecting to benefit 300,000 job seekers in the labour market. The government will provide incentive of RM600 per month up to 6 months for every youth employed for apprenticeship, RM800 per month up to 6 months for hiring an unemployed below 40 years old, RM1,000 per month up to 6 months for hiring an unemployed with 40 years old and above or hiring person with disability (Ministry of Finance, 2020a).

The government also introduced the reskilling and upskilling programmes under PENJANA, with the objective to enhance the employability of the youth and unemployed workers via reskilling and upskilling programme, with expectation to benefit 200,000 youth and unemployed workers in Malaysia. Government will optimise government training facilities, support programs of Securities Industry Development Corporation (SIDC), relax the conditions for PROTÉGÉ Ready to Work (RTW) programme, aiming to enhance the employability of Malaysian youth, particularly the school leavers and fresh graduates (Ministry of Finance, 2020a). As for increase the employability of unemployed workers, the government will cooperate with private sectors on upskilling in certain sectors, provide incentives to encourage unemployed studies short courses in local universities, and enhancing entrepreneurship programs. The reskilling and upskilling programmes will continue to be implemented with allocation of RM 1 billion and expected to benefit 200,000 trainees in year 2021 (Minister of Finance, 2020b).

In the National Budget 2021 speech, the Finance Minister, Dato’ Sri Tengku Zafrul Abdul Aziz, also highlighted the government’s initiative on providing employment opportunities to the youths, particularly the graduates. An incentive of RM1,000 per month for up to 3 months will be provided to private employers, for each new graduate who participates in the apprentice programme of the
companies or organizations. This initiative is to provide employment exposure to the youths and is expected to benefit up to 50,000 new graduates (Ministry of Finance, 2021b:28). Employers can also claim with the government for a grant up to RM4,000 to train the apprentice in their organization.

Under the *Pakej Perlindungan Rakyat dan Pemulihan Ekonomi (PEMULIH)*, the government will allocate RM125 million to implement the Place and Train initiative under the Janapreneur program (Chan & Harun, 2021). This initiative is targeted to the youth groups, which includes school-leavers and graduates, which the programme is expected to provide 30,000 new vacancies in the job market. Youths that registered for this programme will undergo skill training programmes and they are assured of job employment once the training programmes are concluded. They will be able to secure employment in any industry that requires manpower, and the employers are compulsory to provide the candidates with a minimum of 1 year employment contract (HRD Corp., n.d.).

5. **Initiatives Can Be Taken by Youths**

There are a few methods or initiatives that can be taken by the Malaysian youth to prepare themselves for employment post COVID-19 pandemic. One of the methods are to obtain new additional skill sets so that they have more competencies to compete with other job seekers once the national economic restored and new job opportunities exist in the labour market. During the normal time, youths in Malaysia had faced challenges in searching new job opportunities due to their lack of working experience, career networks, not having job-ready skills which made them less attractive to the employers (Morsy, 2012; Bank Negara Malaysia, 2021). Youths can register in the reskilling and upskilling programme, to obtain additional skills and competencies which can be enhance their employability and increase their chance of getting employed during the pandemic crisis.

Youths can also register themselves for the Place and Train initiatives under the Janapreneur program, as they are the main target group of the initiatives. The trainees will undergo skill training programmes which consists of general or functional courses that embedded with self-development modules for up to a month, then proceed with the training of job placement for up to 6 months with a certain organization (HRD Corp, n.d.). Trainees will be given a minimum of 1 year employment contract once they completed the skill training programmes. Although 1 year employment contract is considered a short-term employment contract, youths can take this opportunity to get themselves exposed with the working environment, gaining working experience that can be added into their future resume and stay survive during the pandemic as they are employment with payment.

Instead of seeking for new job opportunities in the labour market, youths can opt to become entrepreneurs so that they become self-employed and contribute to creating new job vacancies in the labour market at the same time. Self-employment is a crucial platform for youths to become more independent and earn a livelihood for themselves (ILO & ADB, 2020). Youths that have financial issues in starting a business and becoming self-employed can apply for micro-credit loans to support their finance. As highlighted in the Budget 2021 speech, government are providing approximately RM1.2 billion of micro credit financing through various financial institutions to encourage entrepreneurship among gig workers and self-employed (Ministry of Finance, 2020).

Besides, youths can become self-employed or entrepreneurs and engage themselves in e-commerce platform. Due to the COVID-19 pandemic and lockdown became a new normal, online commerce had become popular as business and consumers increasingly “went digital”, which providing and purchasing more products online (UNCTAD, 2021). According to MIDA (2021), retailers adapted to the shift in consumers’ behaviour and started to engage in online business, caused the e-commerce sector experience exponential growth and provide opportunity for Malaysian small-and-medium enterprises (SMEs) and micro-SMEs to keep their business running online. Youths who intended become online entrepreneurs can take this opportunity and engage in online business and request assistance from government as the government had introduced *Program Pemerkasaan Pendigitalan Usahawan Kecil (PUPUK)* under the PEMULIH package. The government had allocated RM100
million for SMEs and RM200 million for micro-SMEs to assist entrepreneurs to engage in e-commerce platform.

6. Conclusion

The unemployment rate of youths in Malaysia had increased during the COVID-19 pandemic, further highlighting the necessity to tackle this issue. Initiatives such as wage subsidy programme, hiring incentive and training programme, reskilling and training programme, place and train programme etc. had been introduced by the government to tackle this issue and assist the youth to get employed during this pandemic crisis. There are also initiatives can be taken by the youth themselves, which includes upgrading their competencies and employability by learning new skills, become entrepreneurs and engage in e-commerce, to get themselves employed and earn themselves a livelihood during the pandemic crisis.

References


PERANAN MASJID SEBAGAI PUSAT SEHENTI BANTUAN B40 DI SABAH

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ABSTRAK


Kata Kunci: Masjid, B40, Sabah
Penghargaan

1. Pengenalan


Kerajaan melancarkan pelan bantuan yang melibatkan bantuan kewangan terus kepada isi rumah, subsidi ubah, geran dan pinjaman kepada SME di samping pengurangan cukai.

Di negeri Sabah, kegiatan ekonomi turut menerima impak negatif khususnya di sektor pelancongan dan seterusnya kerkhidmatan perniagaan yang berkaitan dengan pelancongan dan penutupan sempadan. Pekerja kerjaan dalam pelbagai sektor terjejas termasuk pekerja sektor pertanian, perikanan, perindustrian dan perlobongan. Pekerjaan kehilangan pekerjaan, terpaksa menerima pengurangan gaji, cuti tanpa gaji dan sebagainya. Keadaan ini menyebabkan punca pendapatan individu dan isi rumah terjejas.


Kerajaan melancarkan pelan bantuan yang melibatkan bantuan kewangan terus kepada isi rumah, subsidi ubah, geran dan pinjaman kepada SME di samping pengurangan cukai.


74

2. Sorotan Literatur


Selaras dengan konsep dan peranan institusi kewangan sosial ini, instrumen kewangan Islam lebih diperlukan ketika rakyat genting berhadapan dengan kemelut kesihatan dan ekonomi dalam memenuhi hak individu yang paling asas iaitu dharuriyat. Ini termasuklah keperluan asas seperti kebajikan kesihatan dan penjagaan kesihatan seperti perubatan. Selain itu, dari aspek ekonomi, isu seperti kemiskinan situasi (situational poverty), iaitu satu jenis bentuk kemiskinan yang terjadi ketika pandemik (Wan Ibrahim, 2020) telah wujud impak daripada penguncupan pasaran buruh seperti pemberhentian kerja dan seumpamanya. Institusi kewangan Islam berperanan memastikan golongan yang terjejas mendapat hak yang paling asas bagi meneruskan kelangsungan hidup di fasa pandemik.


3. Metodologi


4. Dapat Dan Perbincangan

4.1 Zakat


Di Sabah, dalam menangani isu Pandemik Covid di Sabah, Pusat Zakat Sabah telah bersedia dengan beberapa peranan, strategi dan kaedah untuk memastikan zakat yang diterima kepada golongan asnaf yang memerlukan. Pusat Zakat Sabah telah bertanggungjawab untuk membantu golongan yang terjejas akibat pandemik ini termasuk golongan asnaf. Ini adalah kerana zakat secara haknya berperanan untuk mengimbangi dan menjamin keadilan sosial bagi golongan yang tidak berkembang dan memerlukan bantuan (Kasim Mansur et al, 2018). Oleh itu, tidak dapat dinafikan bahawa zakat dan institusinya amat memainkan peranan bantuan kewangan yang penting dalam situasi genting seperti isu pandemik ini. Antara peranan, strategi atau langkah yang diambil adalah:
4.1.1 Kempen Kesedaran

4.1.2 Usaha Pencarian Golongan Terjejas

4.1.3 Penggalakan Syarikat Berkaitan Kerajaan (GLC) Berzakat Melalui PZN
Melalui media massa, PZN Sabah menguar-urkan agar semua syarikat berkaitan kerajaan (GLC) dan milik kerajaan negeri serta persekutuan di Sabah digalakkan dan digesa memberi sumbangan segera atau dalam bentuk pembayaran zakat perniagaan kepada Pusat Zakat Sabah (PZS) bagi menangani isu pandamik Covid dan membantu golongan yang terjejas dengan lebih ramai (Datuk Mohd Arifin Mohd Arif, Borneotoday, 29 Oktober 2020). Bayaran zakat perniagaan adalah antara cara segera tujahan kewangan kepada PZS bagi meningkatkan dana untuk disalurkan kepada golongan terjejas Covid.

4.1.4 Pemberian Bantuan Khas kepada Asnaf
Dalam usaha memberikan bantuan segar kepada golongan asnaf sedia ada dan lebih terjejas akibat pandemik Covid, pusat zakat negeri juga giat memberikan bantuan khas atau tambahan eluan bulanan. Bantuan tidak produktif diharap dapat meringankan beban harian dan memenuhi keperluan asas golongan asnaf sedia ada. PZS telah memberikan bantuan khas tambahan sebanyak RM100 kepada penerima bantuan bulanan yang tersenarai untuk memastikan golongan tidak terbeban akibat pandemik Covid di Sabah.

4.2 BaitulMal


4.2 Mempermudahkan urusan penyampaian dana bantuan

4.3 Permohonan Bantuan disalurkan melalui platform digital dan individu perseorangan

4.4 Bantuan kepada pelajar-pelajar IPTA dan Pasukan Petugas Barisan Hadapan
Ironinya, dalam masyarakat di Sabah, kumpulan mudah terjejas seperti golongan berpendapatan rendah dan miskin adalah golongan yang paling terkesan dengan kedaratan wabak yang tidak diundang ini. Oleh itu, BaitulMal adalah antara institusi yang mampu untuk menjadi pengubah permainan ‘game changer’ dalam konteks ini dalam aspek bantuan kemanusiaan untuk golongan mudah terjejas untuk kelangsungan hidup di bandar dan di luar bandar. Sepanjang tempoh Perintah Kawalan Pergerakan (PKP) akibat Covid-19 PBNS telah terlibat memberikan bantuan kepada Kementerian Kesihatan Malaysia (KKM) bagi pasukan petugas barisan hadapan. Ini termasuk Hospital Besar Tawau, Hospital Semporna, Hospital Kunak, Hospital Lahad Datu, Hospital Duchess of Kent Sandakan, Hospital Papar, Hospital Tuaran, Hospital Queen Elizabeth (HQE) II, dan Pejabat Kesihatan Kawasan Kota Kinabalu. Dana bantuan ini juga disalurkan kepada pelajar-pelajar Institusi Pengajian Tinggi Awam (IPTA) termasuklah Universiti Malaysia Sabah dan Universiti Teknologi Mara Sabah. (Utusan Borneo, 2020).

4.5 Dana Bantuan Barangan keperluan asas, barangan dapur dan barangan kering
Selain itu, semasa gelombang Covid-19 ketiga yang bermula oktober sehingga disember PBNS juga telah mengagihkan bantuan barangan keperluan asas dan barangan kering kepada golongan Asnaf melalui khidmat sukarelawan dan bantuan melalui Ahli Jawatankuasa Masjid. Selain itu, bantuan asas barangan dapur di Kuawasan terjejas zon merah juga dilaksanakan untuk keluarga yang terjejas

4.6 Memperkenalkan Tabung ‘Musaadah’ atau Bantuan dan Sumbangan Covid-19


4.3 Masjid


4.3.1 Masjid dan Rak Kebajikan

4.3.2 Masjid Bandaraya Kota Kinabalu

4.3.3 Masjid Daerah Kudat
Bukan itu sahaja, terdapat juga orang ramai yang memberikan sumbangan berupa barangan asas melalui masjid sebagai perantara. Contohnya seorang usahawan muda di Kudat, Sabah telah menyediakan Rak Kongsi Rezeki di 15 masjid dan surau yang terpilih di sekitar daerah Kudat. Antara masjid dan surau yang menerima sumbangan itu ialah Masjid Akmal Landung Ayang ; Masjid An-Nur Kampung Ayer; Masjid Nurul Hikmah Kampung Gumpai; Masjid Ar Riyasi Tanjong Kapor;Masjid Jamek Kampung Pengaraban; Masjid Asyakirin; Masjid Al-ihsan PPR Taman Ehsan, Masjid Ubudian Pekan Sikuati, Masjid Ar Rahman Muhibbah; Masjid Imam Hj Dusaan Kampung Ko; Masjid Al-Badar Kampung Parapat; Masjid Ubudian Pekan Sikuati, Masjid Al-ihsan PPR Taman Ehsan, Masjid Ubudian Pekan Sikuati, Masjid Ar Rahman Muhibbah; Masjid Imam Hj Dusaan Kampung Ko; Masjid Al-Badar Kampung Parapat; Masjid Ubudian Pekan Sikuati, Masjid Al-ihsan PPR Taman Ehsan, Masjid Ubudian Pekan Sikuati, Masjid Ar Rahman Muhibbah; Masjid Imam Hj Dusaan Kampung Ko; Masjid Al-Badar Kampung Parapat; Masjid Ubudian Pekan Sikuati, Masjid Al-ihsan PPR Taman Ehsan, Masjid Ubudian Pekan Sikuati.

4.3.4 Masjid UMS
Selain masjid sebagai medium perantara sumbangan, terdapat juga masjid atau surau yang bertindak menyerahkan sumbangan orang ramai kepada institusi yang menguruskan bantuan seperti Universiti Malaysia Sabah (UMS). UMS melalui Pusat Pelaburan Endowmen dan Wakaf juga terlibat dalam mengurus sumbangan bagi Tabung Bantuan Khas Covid UMS yang diperuntukkan khusus bagi pelajar-pelajar UMS yang memerlukan, terutamanya di musim PKP. Para pelajar UMS sama ada yang berada di dalam kampus atau di luar kampus memerlukan bantuan ataupun kemudahan seperti bekalan makanan, internet dan komputer riba. Apa yang diharapkan dengan PKP, para pelajar di seluruh negara terpaksa mengikuti kelas secara maya dan ini sudah tentu menyulitkan perolehan dan data komunikasi yang sesuai. Maka, UMS telah melancarkan kempen Tabung Bantuan Khas Covid, dan telah menerima banyak sumbangan daripada pelbagai pihak termasuk masjid/surau. Contohnya Surau Al-Barakah diiparka Kunak, Sempurna, selain daripada institusi Islam lain seperti MAIWP dan Tabung Haji, yang telah memberikan sumbangan kepada Tabung Bantuan Khas tersebut.

4.3.5 Masjid Negeri Sabah
Seterusnya, bukan hanya masjid sahaja yang menjadi tumpuan pemberi sumbangan malah staf dan jawatankuasa masjid juga tidak dilupakkan. Mereka adalah orang-orang di belakang tabir yang sentiasa

80

5. Rekomendasi: Peranan Masjid sebagai Pusat Sehenti Bantuan


6. Kesimpulan


Umumnya, kerajaan negeri khususnya sebagai penggubal dasar sewajarnya mengambil langkah progresif termakmur untuk memulihkan ekonomi dan membina strategi yang lebih efektif agar sinergi tiga tungsuk utama dalam sistem ekonomi Islam iaitu institusi zakat, bai'tulmal serta masjid akan terus memberikan

81

Penghargaan dan Ucapan Terima Kasih

Rujukan


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THE INTENTION TO USE ISLAMIC BANKING PRODUCTS AND PERCEIVED IMPACTS ON FINANCIAL INCLUSION: A STUDY TO MEASURE ISLAMIC FINANCIAL LITERACY IN MALAYSIA

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ABSTRACT

Today, steady growth of Islamic Financial Sector in Malaysia has become apparent. The products of banking and financial institutions in Malaysia that compliant with Shariah Law have gradually increased. Islamic savings institutions, as known as Pilgrims Management and Fund Board (Lembaga Tabung Haji), were implemented to develop a more comprehensive financial industry in Malaysia. Hence, this study aims to examine the intention of using Islamic banking products among Malaysians by applying the Theory of Planned Behaviour (TPB). A total of 400 data were collected from Malaysian and were analysed by using deploying partial least squares structural equation modelling (PLS-SEM).

By applying a two-steps approach, such as measurement model for outer loading analysis, Cronbach’s alpha, composite reliability, and average variance extracted; the findings from this study revealed that attitude, subjective and social norm, epistemic value as well as religiosity have a positive and significant relationship with the intention of using Islamic banking products. Moreover, Malaysians also perceived that the financial inclusion of Islamic banking had met their needs. Finally, this study helps banking and financial institutions in Malaysia to further understand the intention to use Islamic banking products among Malaysians.

Keywords: Islamic banks, banking products, PLS-SEM, Theory of plan behaviour (TPB), financial literacy, Malaysia

1. Introduction

1.1 Background of the Study

The main discussion of this project is to study the intention to use Islamic banking products and perceived impacts on financial inclusion and to measure the financial literacy in Malaysia. In the year of 1963, Malaysia had begun its development in Islamic banking and with the established of Islamic Banking Act 1983, Malaysia conventional financial banking institution had allowed to provide the banking product and services according to Shariah-compliant. Malaysia had continued to flourish with the launch of the Islamic interbank money market in the year 1994 and the first foreign Islamic financial services had entry into Malaysia and Malaysia financial services had incorporated Islamic banking subsidiary with foreign bank in between the year of 2004 to 2008. Furthermore, Malaysia established the Islamic Financial Services Act 2013 (IFSA 2013) on March 22, 2013, to allow for the prudential standards of Islamic financial institutions in order to oversee the Islamic foreign exchange market and promote financial sustainability and Shariah law compliance. However, there are still people who don’t truly accept Islamic banking products so there is a reason to understand the problem statement and Malaysian behaviour in order to gain a deeper understanding of the adoption of Islamic banking products among Malaysians.
1.2 Significant of Study

Islamic banking is a sort of financial activity that adheres to Shariah guidelines. Malaysia's Islamic banking business has grown rapidly, and it is now one of the world's leading Islamic banking players. According to the existing legal foundations of finance, the Islamic Financial Services Act 2013, enacted by Bank Negara Malaysia, legislative framework and supervision with the goals of gaining recognition for the Islamic banking system that runs alongside conventional banks, as well as furthering Islamic banking development in Malaysia.

Through this study, players in the Islamic banking business were able to gain a better insight into consumer behaviour and attitudes toward Islamic products. As a result, Islamic banking institutions can take additional steps to boost their competitive edge in this business, such as refining their market strategy, upgrading Islamic banking products, and so on.

With the help of the Government of Malaysia and contributions from Islamic banking sector participants, it is expected that the number of Muslims and non-Muslims in Malaysia who use Islamic banking products will surge. As a result, Malaysia's Islamic banking sector will continue to grow and develop while benefiting to the economic growth of a country.

2. Literature Review

2.1 Review of Literature

Islamic banking industry has been one of the most rapid growth industries in the past few decades and has been spread to all of the places around the world and have widely accept by both Islamic and non-Islamic countries and people. Malaysia, for example, is regarded as a leader in the Islamic banking business, as Islam is the country's official religion and the majority of Malaysians are Muslims. The purpose of this research is to evaluate the relationship between each variable and the intention to use Islamic banking products in Malaysia, in order to gain a better knowledge as to how Malaysians, Muslims and non-Muslims alike, intend to pursue the usage of Islamic banking products.

2.2 Intention to Use Islamic Banking Products (Dependent and Independent Variables)

The dependent variable of this study is the intention to use Islamic Banking Products and what someone intends to do or a willingness to act in a given way is referred to as intention. An intention is significant because the more powerful the intention, the more likely a behaviour will be executed or acted upon (Ganesan, Allah Pitchay, & Mohd Nasser, 2020). It is stated in El Qorchi (2005), that Malaysia is one of the few countries with a stable market environment for Islamic banking with a widespread use of conventional banking while the World Islamic Banking Competitiveness Report (2016) shows that the Muslim countries have a significant share of banking industries occupied by Islamic banking: Malaysia with 21.3%, UAE with 21.6%, Qatar with 25.8%, and Saudi Arabia with 51.2%.

The independent variables for this study are attitude, subjective and social norms, perceived behavioural control, epistemic value and religiosity. First and foremost, attitude refers to a set of emotional, belief and behaviour towards particular object and according to Amin et al. (2017), when judging a circumstance, attitude is crucial since it will influence a person's behaviour on a certain behavioural aim. Apart from that, Lajuni et al. (2017), discovered that the intention to adopt Islamic banking products is favourably associated to one's mindset. Secondly, subjective and social norms refer to a person's sense of the social context that surrounds his or her behaviour. According to Kaawaase and Nalukwago (2017), the subjective and social norms was found to have a favourable association with the goal of converting to Islamic banking. Other than that, perceived behavioural control (PBC) is a person's assessment of how difficult it is to conduct a behaviour (Ajzen, 1991). A study from Amin et al. (2014) concluded that PBC could influence the intention of accepting Islamic banking products. Epistemic value is also one of the independent variables and it is related to the perceived utility acquired from an alternative’s capability to spark curiosity for new experience (Sheth et al., 1991; Hung & Hsieh, 2010). According to a study from Goh, Mohd Suki, and Fam (2014), the non-Muslim community,
2.3 Review of Relevant Theoretical Models

2.3.1 Consumer Choice Behaviour Model
This theory is formed by incorporating the theoretical framework of marketing, economics, sociology, psychology and consumer behaviour which proposed by Sheth et al. The figure below (Sheth et al, 1991) shows that consumer choice behaviour consists of five important variables.

![Figure 2.3.1: Consumer Choice Behaviour Model](source: Sheth et al (1991))

Functional value is defined as the customer's perceived utility of the substitute's performance, function, and utilitarian. Second, when particular conditions or scenarios occur, conditional value expresses the customer's perceived utility. Furthermore, social value is defined as a customer's perceived utility when they are a member of a particular social group. Furthermore, emotional values refer to how users feel about something, implying that consumers will be more likely to use a product or service repeatedly if they have more favourable emotions for it and are eager to retain that feeling. Finally, epistemic values refer to the curiosity engendered by alternatives, and it is based on the belief that customers demand innovation and variety. (Sheth et al, 1991).

2.3.2 Theory of Planned Behaviour (TPB)
The TPB was developed by Icek Ajzen using Fishbein and Ajzen's Rational Action Theory (TRA), which is used to anticipate human behaviour. TPB also argues that purpose determines the majority of behaviour, with perceptual behaviour control determining behaviour in only a few cases. (Ajzen, 1991; Kan & Fabrigar, 2017). There are three significant variables that will influence the intention, as illustrated in the diagram below. To begin, a person's attitude toward a behaviour refers to his or her good or negative thoughts regarding the outcome of an action. Furthermore, subjective standards reflect the social pressures that consumers face in their daily lives, which influence their decisions to engage in certain behaviours. Finally, perceived behavioural control refers to the consumer's perception of how simple or difficult it is to do a specific behaviour (Ajzen, 1991).
2.4 Proposed Research Framework
Some variables have been identified to strongly explain the intention to utilise Islamic banking products, according to two models in 2.3 as they're all related to human perceptions of the social world around them, social value and subjective norms will be categorised as "subjective and social norms" to prevent duplication variables. Furthermore, because Malaysia is a multi-racial society, this research looks into the relationship between religion and the dependent variable. The model below depicts the IVs and DV proposed in this study and will be used to examine the relationship between these 5 IVs’ intents to use Islamic banking products.

3.0 Data and Method

3.1 Sample and Procedure
Malaysians from East Malaysia and Peninsular Malaysia will be the target population for this study. Since this research is aimed at the whole of Malaysia, the sampling method chosen for this study is convenience sampling. According to Malaysia's 2020 population estimate, the citizens' population in 2020 is 29,700,000 (Current Population Estimates, Malaysia, 2020, 2020). Moreover, the Yamane formula were being adopted as the tool to measure the sample size.

Yamane formula:

\[ n = \frac{N1 + N}{1 + N1/N} \]

Hence, by sub in the citizen population (29,700,000) as N and using 0.05 as the precision level, the sample size of this survey is about 400 participants. The survey was conducted online, and more than 400 questionnaires were successfully distributed to the public mainly through Microsoft Teams, Messenger and Facebook. However, due to the google form settings, some survey questions are not compulsory to answer, and skipped by some respondents. Therefore, 170 questionnaires were filtered out because they were not completed. In the end, only 400 questionnaires were retained and used in this study.
3.2 Survey Instruments and Pilot Test Outcome

The questionnaire in this study is mainly adapted from some similar studies (Aboagye et al., 2016; Makanyeza, 2017; Zhu et al., 2010; Cheng et al., 2009; Tang & Forster, 2007; Yoon & Kim, 2007; Lee et al., 2002; Wajdi Dusuki, 2008; Hung & Hsieh, 2010; Weng et al., 2018; Gerrard & Cunningham, 1997; Ledden et al., 2007; Zailani et al., 2019; Amin et al., 2011; Ko et al., 2010; Roig et al., 2006; Davis, 1989; Albaity & Rahman, 2019; Tan et al., 2013). For the purpose of coding the respondent’s feelings and perception levels in numerical form, 3-point Likert scale (1 means disagree, 3 means agree) and 5-point Likert scale (1 means strongly disagree, 5 means strongly agree) will be used in the survey question. The questionnaire was created using Google form, and all questions are expressed in English.

Before conducting the main survey, a total of 51 questionnaires were distributed to Malaysians as the pilot test. Pilot test; Outer loading values of each indicator are greater than 0.7; Cronbach’s Alpha for each variable are around 0.8 to 0.9; Composite reliability (CR) is between 0.7 and 0.95; Average Variance Extracted (AVE) is higher than 0.5. This indicating that all items and variables meet the measurement requirements. Therefore, all survey questions should be retained and used for the main survey. Based on the feedback from respondents, some explanations were being added next to the questions.

3.3 Data Analysis

The data analysis of this study can be divided into two parts, including descriptive analysis and Partial Least Squares-Structure Equation Modelling (PLS-SEM). Descriptive analysis plays the role of data summarization (Hayes, 2021), while PLS-SEM plays the role of multivariate data analysis (Memon et al., 2021). As an application, SmartPLS 3 software is used for such analysis and testing. Further explanation of relevant research methodology and research results will be discussed in the next chapter.

4.0 Results

4.1 Descriptive Analysis

Demography Profile and Financial Literacy

In terms of demography profile, there is not much difference between the number of males and females in the responders. Approximately 65% of the respondents were between 18 and 24 years old, and more than 50% of them had a degree certificate. In addition, the salaries of the responders ranged from less than five hundred ringgits to 10 thousand ringgits, and most of them earn five hundred ringgits or less. Almost 60% of the responders were Muslims, and the others were non-Muslims. Other than that, the number of respondents in central regions such as Selangor, Kuala Lumpur and Negeri Sembilan is higher than that in other regions. Next, 50% or more of the respondents have an Islamic bank account and prefer to use an Islamic bank. Moreover, Sharia law is the first impression most responders have of Islamic banking, followed by Islamic religious and low-interest rate fluctuations. Furthermore, most of them agree that Malaysia is a global leader in Islamic banking. Besides, up to 80% of respondents agree that Islamic banks are different from Conventional banks.

Financial Inclusion

In order to measure the perceived impacts on financial inclusion in Malaysia, there is few questions (FI1, FI2, FI3, FI4, FI5, and FI6) regard to financial inclusion. The result shows that FI1 has the highest mean and follow by FI3, FI5, FIIF2, FI4 and FI6. Moreover, FI2 has the highest standard deviation, follow by FI4, FI6, FI5, FI1, and FI3.
4.2 Partial Least Squares-Structure Equation Modelling (PLS-SEM)

*Measurement Model Assessment*

Other than showing the absolute contribution of every variable to the construction definition, the outer loading analysis is also important for the researcher to determine whether the particular variable should be retained or eliminated (Haenlein & Kaplan, 2004). Besides, an outer loading value equal to or greater than 0.4 is considered acceptable, while greater than 0.7 is considered preferable. Other than these will be considered unacceptable (Wong, 2013). In this research, all the outer loading values for each indicator are more than 0.7 which is considered as preferred. In addition, this also shows that all indicators have high reliability and should be retained because all of them contribute a lot to the model.

As one of the elements of Construct Reliability and Validity, convergent validity is usually measured by the Cronbach's Alpha and Composite Reliability (CR). Both of them are slightly different because the CR assumes that all indicators have different reliability, while Cronbach Alpha does not (Wang, Liao & Yu, 2021). This is why Cronbach's Alpha does not conform to the principles of the PLS-SEM algorithm and is sensitive to the number of scale items. For this reason, this also causes the reliability of the latent variable's internal consistency to be underestimated. Hence, this also deepens the idea that researchers should use composite reliability as support (Henseler, Ringle & Sinkovics, 2009). Moreover, both of their value should be equal to or higher than 0.6. The only thing to emphasize is that CR values more than 0.95 are considered problematic, and there is possible to have an indicator redundancy (Sarstedt, Ringle, & Hair, 2017). In this research, all Cronbach's Alpha values for each variable are ranged from 0.846 to 0.915, which shows that the internal consistency of all variables has a strong and good level of reliability. Besides, the value of CR is ranged from 0.896 to 0.935; higher than 0.6 but lower than 0.95; consider satisfactory.
As an indicator of sufficient convergent validity, it is advised to have the AVE that is equal to or higher than 0.5 (Hair et al., 2014). In fact, the AVE of each variable in this study ranges from 0.639 to 0.744; consider as acceptable.

In order to determine the constructs' difference, it is important for researchers to perform discriminative validity after convergent validity testing (Shah & Rahim, 2019). The indicators of discriminative validity used by this study is Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio of Correlations (HTMT).

Under the Fornell-Larcker Criterion table, the AVE in the table will be bold, while the value of other latent construct’s correlation will not. Furthermore, the discriminative validity is sufficient when the value of other latent construct’s correlation is lower than the AVE (Ab Hamid et al., 2017). In this research, discriminative validity is sufficient as all the AVE (0.838, 0.826, 0.863, 0.839, 0.851, and 0.799) are greater than the correlation of other latent constructs.

However, Fornell-Larcker Criterion has lower specificity and sensitivity compared to HTMT (Henseler et al., 2009). Hence, it is advised to have HTMT to test the discriminative validity. On the scale of HTMT, HTMT greater than 1 will lead to insufficient discriminant validity. Instead of just lower than 1, some researcher also advised to have the HTMT that is equal to or below 0.9 (Ab Hamid et al., 2017). In other word, the lower the HTMT the higher the discriminant validity. In this research, discriminant validity is sufficient as all the HTMT values are ranged from 0.711 to 0.9; less than or equal to 0.9.

In addition, Variance Inflation Factor (VIF) is commonly used to determine the degree of correlation between exogenous variables and detect multicollinearity problems. The VIF below 5 will be considered moderately correlated or uncorrelated, while the VIF exceeding 5 will be defined as highly correlated and exhibit multicollinearity problems (Daoud, 2017). In this research, the VIF value is between 1 and 5, indicating that there is no multicollinearity problem.

**Structural Model Assessment**

Bootstrapping refers to a non-parametric resampling technique used to determine the significance of Partial Least Squares (PLS) coefficients and the relationship between exogenous variables and endogenous variable (Garson, 2016). In terms of significance estimation, this research will use the T statistic and P-value as the indicators. First, the variable is significant to the endogenous variables if the T statistic (t) is greater than 1.96 (Wong, 2013). As the research outcome, some exogenous variables such as Attitude (t= 1.979, p= 0.048, β= 0.116), Subjective and Social Norms (t= 3.235, p= 0.001, β= 0.131), Epistemic Value (t=2.417, p=0.016, β= 0.146), and Religiosity (t=7.865, p=0.000, β=0.461) are significant predictors of the intention to use Islamic banking products because their T statistic is all greater than 1.96. Moreover, Perceived Behavioural Control is not significant predictor of endogenous variable as its T statistic is 1.739; lower than 1.96.

In addition, P-value (p) will be used to support the results obtained from the T statistic. According to the p-value rule, if the p-value is greater than the significance level of 0.05, the null hypothesis (H0) of the particular exogenous variable will be support (Bevans, 2020). Similar to the result from T-statistic, only Perceived Behavioural Control (t= 1.739, p= 0.083, β=0.088) is not significant predictor of endogenous variable, and the hypothesis about “There is no significant relationship between perceived behavioural control and intention to use Islamic banking products in Malaysia” will be supported.

Under the situation that other variables remain constant, the path coefficient shows the change of the endogenous variable for each unit of change in the specific exogenous variable (McIntosh & Gonzalez-Lima, 1994). By referring to the outcome, Attitude, Subjective and Social Norms, Epistemic Value and Religiosity are positively correlated with the ‘Intention to use Islamic banking products’ because their path coefficient values are positive. Among these variables, Religiosity has the greatest value of path coefficient, which means that it has the greatest impact on the intention to use Islamic banking products.
4.3 Discussion and Implications

Not only significant to the endogenous variable, but Religiosity also produced the strongest predictions of intention to use Islamic banking products. This result is the same as the results of some previous studies from Kaawaase & Nalukwago, (2017), Echchabi & Abd. Aziz, (2012) and Haque, Osman & Ismail, (2009). Besides, this results proved to be in line with the previous research from Echchabi & Abd. Aziz (2012). Their study was conducted in Morocco and found that Religiosity has a positive impact on the local adoption of Islamic banking services. Furthermore, the outcome in this study also corroborates with Kaawaase & Nalukwago's findings (2017), in which there is a positive correlation between Religiosity and Patronising of Islamic Banking. In this study, the result may be due to the fact that most Malaysians are sincere followers of their religion and beliefs. Especially for Muslim responders, because they are more likely to use banking products that comply with Shariah law. Therefore, Islamic bankers are encouraged to strictly abide by the Shariah law to enhance customer loyalty.

Epistemic Value is the second positive and significant variable next to Religiosity. This finding proved to be in line with the previous researches from Tiong, Suki & Kim (2014), Zailani et al. (2019) and Forster & Tang (2007). Furthermore, Tiong, Suki & Kim’s (2014) study was conducted in Malaysia and found that epistemic value is a positive and significant predictor of intentions to use Islamic mobile banking. In other words, Malaysians are at a stage of high curiosity about Islamic banking products. Therefore, the government and Islamic banks should be aware of this and welcome customers to ask whatever they wondering. In addition, Islamic banks should take advantage of this situation to raise public awareness of Islamic banking products by providing easy-to-understand and sufficient information on a wider platform.

As a combination of social values and subjective norms, social and subjective norms are the third significant prediction of the intention to use Islamic banking products. This result is the same as the results of some previous studies from Aboagye et al. (2016), Forster & Tang (2007), Haque, Osman & Ismail (2009), Kaawaase & Nalukwago (2017), Lada, Harvey Tanakinjal & Amin (2009), Amin, et al. (2011), Ganesan, Allah Pitchay & Mohd Nasser, (2020) and Aziz, Afaq, & Bashir (2018). This finding also proved to be in line with the previous research by Amin et al (2014), in which subjective norm has a significant and positive impact on the preference of Islamic home mortgage. In addition, the research of Tiong, Suki & Kim (2014) also supports this result because their research shows that social value is a positive and significant predictor of intentions to use Islamic mobile banking. In addition, this research also recommends that Islamic banks develop better strategies to satisfy their customers. Since customers are more willing to use products recommended by family or friends, Islamic banks should focus on improving reputation and user experience. For example, looking for better strategies to improve customer satisfaction and make customers more likely to share their good experiences with Islamic banking products with friends and family around them.

Under the TPB theory, one of the significant predictors of the intention to use Islamic banking products is attitudes. This outcome is corroborating with findings from Amin et al. (2014), Kaawaase & Nalukwago (2017), Lada, Harvey Tanakinjal & Amin (2009), Amin et al. (2011), Zhu, Sangwan, & Lu (2010), Albaity & Rahman (2019), Ganesan, Allah Pitchay & Mohd Nasser (2020), Lujja, Omar Mohammad & Hassan (2016), Amin et al. (2017), Weng et al. (2018), Mansour et al. (2016), Aziz, Afaq, & Bashir (2018). According to the research form Amin et al. (2014), attitudes have a significant and positive impact on the preference of Islamic home mortgage. Moreover, the research results of Mansour et al. (2016) also show that attitude is a positive and significant variable of the intention to use e-banking services. Islamic banks should carry out educational and charitable activities for the purpose of advertising and enhancing the image of Islamic banks among the public. This can enable consumers to have a better attitude towards Islamic banking, thereby increasing consumers’ willingness to use Islamic banking products.

Another variable under the TPB theory but is insignificant to the intention to use Islamic banking products is Perceived Behavioural Control. The results proved to be inconsistent with the findings of
Aziz et al. (2018), which found that Perceived Behavioural Control had a significant and positive influence intention to use Islamic banking services. There are some other studies is inconsistent to this result, such as the studies from Amin et al. (2014) and Ganesan, Allah Pitchay & Mohd Nasser (2020), showing that Perceived Behavioural Control is significant to customers’ intentions. The possible reason for this result may be the respondents’ perception of Perceived Behavioural Control, who believe that PBC is less important than other variables. Besides, it may also be due to the different cultural backgrounds and locations of the experiment.

5.0 Conclusion

In short, religiosity, subjective and social norms, epistemic value, and attitude are significant predictors of the intention to use Islamic banking products. Among them, Religiosity produced the strongest predictions of intention to use Islamic banking products. In addition, this suggests the preference of Malaysians—they prefer to use products that match to their beliefs. This study also found that most of the respondents have a certain level of financial knowledge. Besides, most of them also agree that the participation of Islamic banks can better promote financial inclusion. Although the experiment was successfully concluded, there are still some minor flaws in this research. The first limitation of this study is that most of the responders are the younger generation who are between 18 and 24 years old. This increases the possibility of prejudice, because different ages may have different perceptions and views on the Islamic banking industry. Therefore, the study extenders are recommended to have an equal number of respondents in every single age group. Second, the way in which the questionnaire is distributed is also a limitation of this study. This is because people are reluctant to join the face-to-face surveys during the pandemic, and the researchers are also not be advised to do so. The same goes for this research, the surveys are distributed through some online platforms without the supervision of researchers. Hence, there is a possibility that the respondent will answer the question without understanding the question. In addition, it is difficult to collect feedback from the respondents, if the feedback section is not provided at the end of the survey. Therefore, study extenders are not only encouraged to set up a feedback section, but also encouraged to collect data through face-to-face communication after the pandemic is over. This can improve the accuracy of the data and prevent the respondent from answering the question without understanding the question. Moreover, the sampling method used in this study is also one of the limitations of this study, because it may lead to bias and sampling errors. This is because convenience sampling enables researchers to distribute surveys to people they are familiar with. Hence, this may result in an unequal number of respondents from each segment. Thus, it is recommended that study extenders target specific groups of responders rather than the entire country. According to the response, the instability of telecommunications has a negative impact on the use of Islamic banking, so the government is encouraged to improve infrastructure development and Internet stability and coverage in Malaysia, especially in rural areas.

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AN INSIGHT INTO THE RELATIONSHIP BETWEEN HUMAN RESOURCE QUALITY, RISK-TAKING PROPENSITY, AND COMMUNITY-BASED ECOTOURISM IN THE RURAL COMMUNITY

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ABSTRACT

Community-based ecotourism (CBeT) has become a growing trend for the rural community venturing into tourism in Malaysia. However, the lack of know-how and entrepreneurship skills may decrease the potential of sustainable ecotourism businesses that they are dwelling in. Some scholars argued Human Resource Quality (HRQ) dimensions, which include the value of competence, attitude and behaviour, and physical appearance, equip the internal quality needed by an individual to succeed in any endeavour. Meanwhile, the risk-taking propensity is expected to entice further the readiness of the community. The study reviewed some literature on the topics of CBeT related to HRQ, as found in various peer-reviewed journals and Scopus indexed journals. The study found that there is a significant correlation between the role of risk-taking propensity that can influence the decision making of an entrepreneur by assessing their personality, which may include the dimension of HRQ. Therefore, there is a potential effect of HRQ and risk-taking propensity in ensuring the sustainability of the community-based ecotourism business.

Keywords: Community-Based Ecotourism, Human Resource Quality, Risk-Taking Propensity, Sustainable Development, Rural Community.

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1. Introduction

Malaysia aligned its tourism policy with the United Nations Sustainable Development Goals (UNSDGs) by reaffirming tourism’s position as a catalyst for sustainable, responsible, and equitable economic growth. Malaysia’s National Tourism Policy 2020-2030 made it firm that the country needs to break out of its comfort zone and start to reinvent the tourism policy to stay competitive among ASEAN countries going global in due course. Knowing that people have started to plan their vacation after being vaccinated and the requirement for all tourism spots to practice free of Covid-19 harm. Tourism Malaysia has adopted six transformation strategies and one of them is to practice sustainable and responsible tourism. One of the strategic actions is to reinforce the role of tourism as a catalyst for rural empowerment. However, it requires humungous effort from all sides to effectively applied this policy especially towards the rural communities who are still lacking fundamental needs for them to sustain in ecotourism business Particularly, on issues concerning human resource qualities and entrepreneurial risk-taking propensity. Past studies argued that in the tourism industry most important aspect is the capacity of the employees of the ventures to provide a satisfying service (Gajić et al., 2011). In addition to that, the entrepreneurial mindset of being able to take a risk may equip further the flexibility as well as the sustainability of the business (Dhliwayo & Van Vuuren, 2007).
2. Background

Normally, community-based ecotourism faces most challenges of sustainability due to its heavy reliance on environmental, cultural, and social aspects. Local community members are regarded as the guardians of the natural resource in their area and they are typically involved in conservation efforts, which raises environmental awareness among the community. According to Zhang & Lei, (2012) local communities can be encouraged to participate in ecotourism by applying suitable management approaches aimed at raising local knowledge of environmental issues, fostering positive attitudes toward ecotourism, and developing environmental plans. The study by Claudia, (2012) emphasised the micro approach of human resource quality to further improve service methods in the hotel sector and set the standard for excellent quality service. The study highlighted three dimensions that are often utilised after breaking down several measurement quality models from diverse literature studies. The dimensions are “competence”, “physical appearance” and “behaviour and attitude”. However, the legitimacy of these dimensions was not empirically validated and the study focused on the hotel industry rather than community-based ecotourism. In other words, the dimensions might be questionable for the community-based ecotourism purpose. Aside from that, the risk-taking propensity is a crucial element in deciding whether to pursue entrepreneurship or to start a new business, as well as for the growth and profitability of small businesses (Antoncic et al., 2018). Moreover, less literature explaining the usage of risk-taking propensity as a tool to analyse whether it is a viable element for a community-based business. Hence, combining these two variables as parts of the appropriate management techniques for sustainability and analysing the effectiveness for sustainable development of community-based ecotourism will contribute to extensive studies on sustainability.

3. Literature Review

3.1 Human Resource Quality

Human capital is the stock of skills that the labour force possesses (Goldin, 2019). Goldin (2019) stated that human capital is defined as an intangible collective resource possessed by individuals and groups within a given population. These resources include all the knowledge, talents, skills, abilities, experience, intelligence, training, judgment, and wisdom possessed individually and collectively, the cumulative total of which represents a form of wealth available to nations and organizations to accomplish their goals (Huff, 2018). A new component of human resource development has been brought into emphasis from the standpoint of a market economy: increasing the quality of human resources in the organisation. The existing human resource management system now incorporates a new quality management function that covers human resource quality management (HRQ) (Lyskova, 2020). As defined by Claudia (2012) HRQ comprises of three dimensions; namely, competence, attitudes and behaviour, and physical appearance.

3.1.1 Competence

The term competence is first introduced by White (1959) in the article on performance motivation. He defined competence as the organism's capacity to interact effectively with its environment. As time goes, the definition has been refined. Oxford Language Dictionary defines competence as one’s ability to do something successfully or efficiently. The definition is quite similar to describing the noun of capability. Stephenson (1997), for example, defined capability as the integration of information, skills, personal traits, and the ability to learn to cope successfully with novel and familiar circumstances or tasks: a viewpoint similar to that of Irkett (1993)'s competency. In the context of management, Competencies may be defined as either apparent performance, the standards or quality of a person's output, or a person's underlying qualities (Hoffmann, 1999). The origin of competence in management began in the late 1960s when David McClelland found an issue in the old theoretical approach of assessment technique. He then created the concept of competence as a centre of personnel assessment intending to face future, performance, objective, and operability. The article Testing for competence rather than for intelligence by McClelland published 1973, provided the early foundation for competence theory (Liu et al., 2005).

Competence in tourism is defined as the ability to manage tourism activities effectively based on knowledge, ability, behaviour, skill, and inspiration toward task completion, and it is an underlying...
attribute that enables an individual to complete a task with a more effective result while adhering to a set of standards. (Theerapaksiri et al., 2020). Further in the research, Theerapaksiri et al., (2020) mentioned the usage of the Deming Cycle in managing the efficiency of tourism management. The theory consists of 4 stages of action that is (1) Plan, (2) Do, (3) Check, and (4) Action. The author found that competency in tourism management was Knowledge of management, Skills of management and Attributes to management (KSAs) of an individual’s achievement that consists of the 4 stages of the Deming Cycle to reach the objectives. It is stated in the research that competency is part of a crucial factor in tourism management and also sustainable tourism because highly competent management would be able to produce high-quality service and productivity. To obtain a good competency trait, employees have to be educated and equipped with useful skills related to their area of work.

In the article Moving Forward on Competence in Sustainability Research and Problem Solving, Wiek et al., (2011) claimed that the identification of what constitutes competence in sustainability is still at a budding stage. In the context of sustainability, competence is defined as having the knowledge, skills, and attitudes necessary for successful task performance and problem-solving concerning real-world sustainability challenges and opportunities. Sustainability has become an issue worldwide; it is proven that the earth is now experiencing climate change where the weather is unpredictable and natural disaster is recurring more often. On top of that, we are now in the middle of handling the coronavirus pandemic that has strip away the normality of our lifestyle. This means that we need more hands-on for practising sustainability regardless of sectors we are in. However, it is also a concern that our society is unprepared to change their traditional way of living onto living sustainability. To make a sustainable living reality, we need more people that can cope with sustainability challenges in creative and holistic ways. That is why we need the quality of competence in an individual. Wiek et al., (2011) introduced 5 types of individual competency that will help in obtaining quality sustainability research and problem-solving. Table 1 shows the types of individual competency and its definition.

Wiek et al., (2011) added further that each individual who is an actor in the field of sustainability regardless of any sector should be trained and equipped with these qualities. It is important to distil the value of competence into the form of knowledge and skills because competencies must be demonstrable and testable if they are to be beneficial in developing a distinct and recognisable sustainability qualifications programme. We must determine how the five specific sustainability competencies transfer into real-world sustainability research and problem-solving. It is highlighted in Suryani et al., (2021)’s research about the importance of the local community playing a part in the sustainability of the tourism sector. The local community is the main actor in tourism transformation. Community participation is imperative in community-based tourism. Community empowerment, in which the community understands information and can participate in decision-making, is also important for sustainable tourism growth. Tourism development can be encouraged by an empowered community. Some of the challenges to sustainable tourism include poverty, a lack of knowledge in management policy, poor communication, and lack of competency. which brings us back to the importance of being competent in tourism management.

3.1.2 Attitude & Behaviour

Attitude and behaviour are something that each organism on this planet has. Be it human or even a plant, each organism has a unique way of behaving and reacting towards something. Generally, attitude is defined by Oxford Languages as a settled way of thinking or feeling about something. The term attitude is mostly used in the field of psychology because it involves the mental and character of an individual. In an elaborated explanation, attitude is a mental process, often with some degree of aversion or attraction (emotional valence), that reflects the classification and evaluation of objects and events (Britannica, 2013). In another source of the definition, attitude is a state of the person that comes into being based on some transaction with the environment (Campbell, 1963). Campbell (1963) further explains that attitudes do not exist at all until an individual perceives an attitude object and responds to it on an explicit or implicit basis. This definition is supported by Eagly & Chaiken (2007) with added elements and modification, stating that attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour. So, it can be concluded that
attitude is how a person behaves after analysing an object and the result could be either a positive or a negative reaction. This brings us to the next term which is behaviour.

Oxford Language refers to behaviour as how one acts or conducts oneself towards others. In addition, Britannica encyclopaedia describes behaviour as something related to expressing one’s emotion. For example, one is expressing happiness, disappointment or even anger in which the action of expressing is said to be a behaviour. In a psychology view, Ossorio (2006) stated that behaviour is described as the change of attitude of one individual in context to their environment. Changing attitude from one prospect to another in response to a situation or maintaining it is what we call mannerism as well. Hence, we could see that attitude and behaviour are two terms that are closely related and influence each other. In her article, Claudia, (2012), identified six sub-dimensions under the umbrella of attitude & behaviour. Responsiveness, willingness to serve, empathy, friendliness, hospitality, and personalisation are identified as the most common key terms in the area. Following the study of Ekinci, (2001) attitude and behaviour in the service industry are related to the degree to which service employees demonstrate, on one hand, competence in performing their tasks, and on the other hand, quality of empathy shown in interaction with customers. This definition highlighted the importance of the service given by an employee towards its customer. Tourism is essentially a service industry or, perhaps more accurately, an amalgam of service industries. Consequently, its management practices are typically concerned with such issues as quality and productivity in which fall within the aegis of services marketing.

In another view, it is the creation of a psychological environment in the form of subjective personal reactions and feelings being experienced by consumers after consuming the service (Otto & Brent Ritchie, 2012). By following the theory of Claudia (2012) and the definition by Ekinci (2001) exist a strong relationship between the importance of attitude and behaviour in the tourism sector. This is due to the heavy reliance on service as tourism’s main selling point, which is creating value for customer satisfaction. However, there should be a heavy focus on the attitude and behaviour of a local community that participates in community-based ecotourism because the community plays a huge part in creating a psychological environment for the customers while maintaining the sustainability of the natural environment (Suryani et al., 2021). According to Studies & Kataya (2020), sustainable cultural development can be achieved by: preserving cultural integrity; preserving local cultural diversity; ensuring the protection of the natural environment and traditions; encouraging local people to keep traditional habits; respecting the property rights of local people; educating tourists to adopt appropriate behaviour. The sustainable development of local communities is manageable if the communities maintain control over the development of tourism. Job creation can be offered due to an increase in the community living standard as a result of the tourist influx. This means that sustainability can only be achieved if the local community can take control over the business which also means, local community needs to be equipped with the skills and knowledge of good service conduct and sustainability for them to be able to give good quality service to the customer and showcase the true value of ecotourism.

3.1.3 Physical Appearance

Physical appearance is the outward appearance of any person, irrespective of sex, hairstyle, beards, manner of dress, weight, height, facial features, or other aspects of appearance. Physical appearance is the first thing that other people see whenever they are interacting with us. Physical appearance may also provide information about our background, for example, the colour of our skin, hair, and eyes. Different from the previous dimension which focuses on the internal traits of an individual, physical appearance focuses on the external traits. So, what makes physical appearance as an important factor in determining the quality of human resources? It is common in our daily lives observation that attractive individuals are more popular than someone less attractive. It happens that attractive people get treated better and gained opportunities due to their appearance (Akbari, 2016) and this is supported by Dion et al., (1972) that said attractive people always have the advantage in situations and are given priority over the less attractive. Akbari (2016) added that this response is due to the positive feelings the observer gets at first glance when observing good-looking people.

In the management context, physical appearance also plays a role in building a relationship with the people in the organizations and also potential clients. According to Eckel & Wilson (2006), Physical
attractiveness promotes trusting and cooperative behaviour. In the trust game, beautiful subjects are more trusted and are expected to trust more. This statement is supported by Rosenblat (2008) that said when negotiating with others, attractive individuals are given preferential treatment and appear to be, or are thought to be, more successful communicators and negotiators. One of the industries that emphasise the importance of physical appearance in their working environment is the service industry and that includes tourism. According to Söderlund & Julander, (2009), physical appearance impacts consumer perceptions about service personnel, customer satisfaction, and overall assessments of service organisations. In an advertisement, the physical appearance of a person influences not just the perception and judgement of that person, but also the associated products. This means that the appearance of a service industry worker will mirror the company that they are working in and the service that they are providing. Claudia, (2012) added more to this claim, that unconscious variables influence customer service quality judgments, which are evaluated while interacting with workers, and physical attractiveness may be one of them.

The study of physical attractiveness in tourism is elaborated more in Fang et al., (2020) research, where the author emphasises customer engagement and its relationship with physical attractiveness. However, they discovered research has been scarce further into the physical attractiveness of service employees. The authors claimed that physical attractiveness is underexplored even though it is crucial and necessary in customer engagement. It can be said the same for the importance of physical appearance in community-based ecotourism (CBeT). This is due to the nature of the business, Nature, (2015) describes community-based ecotourism as a type of tourism in which the local community controls and participates in community development and management initiatives, with the majority of the benefits stay with the community. CBeT gives authentic visits within homes, villages, heritages, and environments to national and international tourists; the earnings produced are directly provided to the families with whom the guests stay and purchase services. (Baniya et al., 2018), This means that a large number of those who came and experienced CBeT are those who seek the originality of being in the local community environment. In this context, the physical appearance or the physical attractiveness of the individuals in the local community could be regarded differently since the standard of good physical appearance is weighed differently. For example, in the hotel industry, a good physical appearance could be part of the uniform, hairstyle, and make-up of the employee. However, for CBeT, a good physical appearance could mean the hygiene and the well-being of the individual. According to Hamermesh & Abrevaya, (2011) People who are physically beautiful have more socially acceptable personality qualities. They look more confident, more capable of resisting peer pressure, happier, more cheerful, and more intellectual. Physical attractiveness has also been related to vitality, better immunological responses, and stronger immune systems. The word attractive in this context can refer to an individual that is happy and living a healthy lifestyle.

3.2 Risk-Taking Propensity
Generally, risk-taking refers to the tendency to engage in behaviours that have the potential to be harmful or dangerous, yet at the same time provide the opportunity for some kind of outcome that can be perceived as positive (Luhmann et al., 2017). In the same light, risk according to Forlani & Mullins, (2000) reflects the degree of uncertainty and prospective losses associated with the outcomes, which may be gotten from a given behaviour or a set of behaviour. However, in a general management context, Brockhaus, (1980) defined risk-taking as receiving rewards based on the situation. The individual will subject himself to the consequences, where failure will result in rewards and vice versa. For example, an entrepreneur will have to accept that he will either gain profit or make a loss when he opens up a new venture. The proclivity to take risks has long been seen as an essential characteristic in business. The general definition of an entrepreneur is the same until today as Oxford Language defined it as a person who sets up a business or business, taking on financial risks in the hope of profit. In literature, Cantillon (1734) described the entrepreneur as a person who takes a risk or the exact word to be "a bearer of uninsurable risk". In more elaborated views and words, according to Antoncic et al., (2018) entrepreneurs are individuals who establish and manage new businesses or own and manage existing businesses; they are essential players in the entrepreneurial process and are liable for the behaviour and business results of their small and medium-sized businesses. Entrepreneurial personality traits can be seen as a basis of entrepreneurship. Entrepreneurial personality is crucial in the management of SMEs.
Because they are expected to be leaders, their quality of personality will influence the company’s future development. A decision to become an entrepreneur implies a particular outlook on life and the world (Kozubíková et al., 2017). In the study of Ray, (1994), on the role of risk-taking in Singapore, he categorised the characteristics and mindset of an entrepreneur and non-entrepreneur in the country. Table 2 shows the difference between entrepreneur and non-entrepreneur mindset towards risk.

There is a difference in the way entrepreneur & non-entrepreneur perceived risk. An entrepreneur is accepting the risk while a non-entrepreneur avoids the risk. However, it does not mean that entrepreneurs have a high level of risk-taking. Experienced entrepreneurs can have a lower risk-taking propensity (Giunipero et al., 2008). Miner and Raju (2004) presented findings backed by meta-analyses indicating that entrepreneurs are more risk-averse, and concluded that the function of risk propensity in entrepreneurship remained unclear. A high risk-taking propensity is on the other end of the risk-taking propensity continuum. According to Kets de Vries (1977), entrepreneurs are more likely to take moderate risks than excessive risks.

3.2.1 Role of Risk-Taking Propensity in Community-Based Ecotourism

Community-based ecotourism focuses on environmental, social, and cultural sustainability and plays a vital role in meeting the challenges of sustainability of world tourism (UNEP, 2011). In CBeT, local community members are considered protectors of natural resources and areas and experts in cultural, environmental, and livelihood. Community-based ecotourism encompasses three major laws of sustainable development i.e. economic efficiency, social value, and environmental sustainability (Mbaiwa, 2004). This means that CBeT is not just a relaxing and entertaining activity, but also an activity for maintaining the sustainability of the environment while supporting the economic sector of the local community. This is by creating more job opportunities for the locals and improvements of their living by having better infrastructure. Community-based business is a good idea for the local community to participate in the tourism industry, however, there is an issue in whether the local community is prepared to enter the world of business. Hence why this study is proposed, to see whether risk-taking propensity has a role in the local community decisions on participating in CBeT.

"The most important aspect of risk-taking occurs with the decision to become an entrepreneur and involves the ability to give up the security of a regular job" (Ray, 1994).

The above quote by Dennis Ray is said to be the first risk-taking thoughts of an individual when they wanted to decide on becoming an entrepreneur - which is the thought of not having a regular 9-5 job and committing fully into business. Some factors might influence this decision-making and one of them is an individual personality. According to Antoncic et al., (2018) entrepreneurs' risk-taking propensity, which is one of their characteristics, may be critical for deciding whether to pursue entrepreneurship or to start a new business, as well as for the growth and profitability of small businesses. In the same light, Janney & Dess (2006) stated that risk-taking decisions are more apparent in the new venture creation process. Based on this argument, they concluded that an individual will be exposed to three dimensions of the risk construct, which are a risk as a variance; risk as a downside loss and bankruptcy; and risk as an opportunity. However, Ray (1994) has another opinion and stated that, in entrepreneurship, risk-taking is more of a decision-making characteristic that is inextricably linked to the concept of opportunity than a generalised personality attribute. The author further explains that the personality of the entrepreneur, undoubtedly, has a significant impact on how these possibilities and risks are evaluated.

Nevertheless, the decision on personality is filtered through the decision of the organisational, institutional, and situational contexts. The circumstances in which a decision is made can either enhance or suppress personality or risk-taking characteristics. This is because people who are risk-takers in one situation could be risk-averse in another. There is no reason to believe that anyone, entrepreneur or not, has a consistent risk appetite in all scenarios. Individuals are unlikely to have a generic risk proclivity. It is also important to talk about entrepreneur risk profiles. These profiles would identify risk propensity and would focus on risk recognition procedures, risk assessment, the acquisition and utilisation of uncertainty-related information, and risk management methods inherent in diverse business scenarios.
created by the entrepreneurial process. The author then concludes that choice was the core of an individual risk-taking propensity, which means that making a choice is one's way of leaning towards taking a risk.

4. Resource-Based View Theory (RBV)

Human resource quality is the quality of the people that work in an organization meanwhile the success of the tourism or hotel industry depends on the type of people that work in the organization. Inadequate quality is a result of poor technical, technological, and organisational control, but the major element in setting requirements and enforcing discipline is, in the end, the individual himself (Gajić et al., 2011). Hence, this imposes a heavy reliance on human resources in the tourism industry to have good abilities such as having good knowledge and skills. The resource-based theory highlights the importance of resources and capabilities in establishing a competitive advantage’s foundation (Hart & Dowell, 2010). A resource is something that a company has, such as physical and financial assets, as well as employees’ talents and organisational (social) procedures (Gajić et al., 2011). A capability, on the other hand, is something that a company can do because of the resources and processes it has (Karim & Mitchell, 2000). According to Barney, (1991) in resource-based theory, to create a sustainable competitive advantage, there is a need to develop superior capabilities and resources. To put it simply, RBV gives insight on the importance of human resource quality i.e. competence, good attitude, and behaviour, and good risk-taking propensity traits (resources & capabilities) could help community-based ecotourism to achieve sustainable competitive advantage. This is because an individual that has the right knowledge and skills of sustainability practices and entrepreneurship can utilize the resources that they have to keep the ecotourism business sustainable and achieve a competitive advantage.

5. Conceptual Framework

Figure 1 shows the conceptual framework that connects human resource quality with risk-taking propensity and sustainable community-based ecotourism.

6. Methods

Literature was first sought based on the topics of sustainable community-based ecotourism. It followed with the keyword search of human resource qualities and risk-taking propensity. Only peer-reviewed articles and journals with Scopus indexes were referred. The first author initially reviewed the articles to extract information on the predictors of sustainable community-based ecotourism. Only those related to human resources and decision-making were further read to come up with human resource quality and risk-taking propensity. The second author screened further the articles and rejected that literature not specifically related to the context of the study. The current study managed to thoroughly discuss two predictors, human resource quality and risk-taking propensity in which the latter could be used as the mediator in ensuring the CBeT is successfully operated and sustained.

7. Limitation and Future Research

The study only initiated a base for further study on what become the real challenges for the community to not successfully operating a CBeT. A thorough review of literature related to the tourism industry is required to measure how sustainability is measured. A preliminary study may enhance the relevance of variables under study to prove that those variables are worth pursuing.
8. Conclusion

Literature reviews discuss the topics of human resource quality, risk-taking propensity, and community-based ecotourism, which were found in various peer-reviewed journals and Scopus indexed journals, it is learned that competency, as well as attitude and behaviour, can be considered as viable elements to be used as the dimension of human resource quality in the community-based ecotourism sector. However, physical appearance which is suitable to part of dimension in the hotel industry did not closely suit the CBeT. Nevertheless, as a recommendation, community well-being could be a new dimension of human resource quality in CBeT because there are studies that measure the quality of the local community's well-being as a factor of the community's development. The study also found that there is a significant correlation between the role of risk-taking propensity that can influence the decision-making of an entrepreneur by assessing their personality. Therefore, there is a potential effect of HRQ and risk taking-propensity in ensuring the sustainability of the community-based ecotourism business.

Acknowledgement

This research was part of Universiti Malaysia Sabah’s research grant scheme (grant number: DN21098).

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**Appendix**

**Table**

Table 1: Five types of individual competency in sustainability

<table>
<thead>
<tr>
<th>Types of individual competency</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>System thinking competency</td>
<td>Understand the intermediate and underlying causes of complicated sustainability issues.</td>
</tr>
<tr>
<td>Anticipatory competence</td>
<td>The ability to think systematically about the future and future generations, as well as the functional linkages between sustainability research and problem-solving competencies.</td>
</tr>
<tr>
<td>Normative competence</td>
<td>Understanding of ideas such as justice, equity, social-ecological integrity, and ethics. It entails comprehending how these notions differ between and within cultures, as well as how incorporating these concepts contributes to the resolution of sustainability issues.</td>
</tr>
<tr>
<td>Strategic competence</td>
<td>The capacity to create and implement interventions and governance solutions jointly with the sophistication required to meet sustainability problems.</td>
</tr>
<tr>
<td>Interpersonal competence</td>
<td>The capacity to motivate and facilitate sustainability research and problem-solving.</td>
</tr>
</tbody>
</table>

Table 2: Differences between entrepreneur & non-entrepreneur in Singapore
Entrepreneurs | Entrepreneurs can give up job security and take specific kinds of risks related to launching a new venture because they have confidence that they will either succeed or be capable of carrying on a successful career.

Non-Entrepreneurs | Whereas job security is a critical variable that holds non-entrepreneurs to the status quo in Singapore, the potential loss of self-respect and self-image, the fear of failure, appears to be a force that drives Chinese entrepreneurs in Singapore to succeed.

**Figure**

| Human Resource Quality | Risk-Taking Propensity | Sustainable CBET |

Figure 1. The Conceptual Framework
MACROECONOMIC VARIABLES AND MALAYSIA HOUSE PRICE INDEX

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ABSTRACT

Malaysia is one of the developing countries that facing an upward trend in demand for housing. However, the increasing trend in housing prices has become worrying. This study aims to examine the macroeconomic determinants of the housing price in Malaysia. The house price index and macroeconomic data on gross domestic products growth, consumer price index and money supply were collected based on quarterly basis over the period from 2000 to 2019. The Autoregressive Distributed Lag (ARDL) model was used to investigate the effects of long-run and short-run estimates of the proposed econometric model based on the selected macroeconomic variables mention above. The results from the Augmented Dickey-Fuller and Phillips-Perron tests of stationarity indicated that all the variables were non-stationary at the level, \(I(0)\) but stationary at the first difference, \(I(1)\). The long-run coefficient estimates showed that the gross domestic product and money supply are significant and positively influenced the house price index in Malaysia. In addition, the consumer price index was also significant, but has negative relationship with the house price index in the long run. Further analysis using causality tests revealed that statistically only gross domestic product and money supply were found significant in influencing the house price index in the short-run.

Keywords: House Price Index, Macroeconomic variables, ARDL, Malaysia

1. Introduction

Malaysia has had tremendous economic growth over the last decade, which has contributed significantly to the rise in demand for residential accommodation, particularly in urban areas. As a house is one of the most fundamental human necessities, the year-on-year increase in prices has impacted the affordability of housing for Malaysian people. The study demonstrates that rising property prices create investor worry, particularly in the long run.

The progress of technology provides opportunities to better comprehend the dynamics of the real estate market by properly measuring the price indicator of real estate and monitoring price changes over time. House prices have risen considerably in recent years, whether in urban or rural areas. As such, a house price index is frequently employed as a measure of real estate prices. The house price index is crucial
to the housing market since it is volatile and contributes to the market's volatility. Additionally, it is the primary consideration when a household decides to buy or sell real estate.

Financial crises may also have an effect on Malaysia's real estate market. The Asian financial crisis (1997–1998) and the global financial crisis (2007–2008) had a profound effect on ASEAN countries, particularly Malaysia (Shukor et al., 2016). The Malaysian house price index fell by 18.78 percent during the Asian financial crisis; however, the recovery from the loss was not as rapid as in Singapore, where the house price index increased by only 10.20 percent between 1999 and 2005. (Global Property Guide, 2007). The economic recession of 2007 also had an effect on the Malaysian housing sector by lowering house prices. The figure 1 below illustrates the evolution of Malaysia's house price index from 2000 to 2016. Meanwhile, macroeconomic variables may have been impacted by the economic slowdown, affecting house prices indirectly. For example, Malaysia's gross domestic product contracted during both of the financial crises, owing to a fall in export demand and foreign direct investment inflows (Rasiah & Abidin, 2009).

Figure 1: Malaysian Housing Price Index, 2000 – 2016.

2. Literature Review

2.1 House Price Index

The house price index reflects the disparity in housing prices. Additionally, it can be used as a guide for rent, debt, and risk assessment for mortgage-backed securities (MBS). According to (Afiqah et al., 2014) the house price index, the housing market has a high positive correlation with economic growth. In addition, macroeconomic variables are collectively significant in influencing house price movement in the long run (Pinjaman and Kogid, 2020). Malaysians previously referred to the average house price as the Malaysian House Price Index (MHPI), which was issued quarterly by the National Property Information Centre (NAPIC) and established by the Valuation and Property Services Department (VPSD). According to NAPIC, base year adjustments represent changes in house prices in response to buyer preferences and emerging market trends, as well as efforts to contain housing prices in Malaysia. MHPI is also used in real estate development to help design a country's economic policy.

2.2 Gross Domestic Product

According to Qing (2010), a rise in investment would result in an increase in GDP. It demonstrates the link between property investment and GDP. GDP is considerably and positively related to the MHPI, according to Ong (2013). Chioma (2009), an increase in consumer spending leads to an increase in GDP, which in turn leads to a rise in house prices. Housing prices and GDP have a statistically
significant correlation (Grum & Govekar, 2016). Other research, such as Zhu (2004), have found that the price of housing and the housing market in Asia have a very strong positive link with the GDP rate. Housing prices and GDP rates have a negative correlation, according to some researchers. According to (Zandi et al., 2015), housing prices have a negative impact on GDP growth.

2.3 Consumer Price Index

The use of inflation rates as a variable in the research of house prices has been investigated since the 1970s, according to Dougherty & Order (1982) and Harris (1989), with the Consumer Price Index as the foundation of inflation rate assessment. According to Zandi et al. (2015), the house price in Malaysia has no link with inflation because the inflation rate has a very high F-value. Inflation has a negligible effect on housing prices, according to some studies (Tze, 2013; Tan, 2011). Madsen (2012) also suggested that inflation has a negative impact on real estate values. Most products, including everyday essentials and even building materials, would rise in price as a result of inflation, affecting house costs (Zhu, 2004). In addition, Zhou and Chau (2015) discovered that inflation would have a positive and minor impact on real estate prices in the long run. Additionally, increases in inflation have a large positive impact on real estate prices in the short run. Although some of the researchers had found positive relationship between housing price and inflation rate, but there are also negative relationship between these two variables. Guo, Wang and Ma (2015) argued that increase in inflation can stimulate the rising of housing price in the short run, but the rise of housing prices can curb inflation in the long run.

2.4 Money Supply

As a result, a rise in the money supply should theoretically result in an increase in housing prices. Adalid and Detken (2007) looked at the impact of broad money growth on property prices in a number of developed countries. They discovered a strong link between broad money growth and housing prices. During price booms, this link was at its strongest. Ball (2016) looked at how the relationship between urbanisation and economic growth affects home prices, finding that the money supply has a lagged influence on present housing returns, meaning that market efficiency may be questioned. Money shocks, as well as monetary policy and nominal interest rates, play a significant impact in determining real estate prices, as well as money shocks, by generating extraordinarily volatile housing investors.

3. Data and Method

In this research, the following model was adopted as follows:

\[ HPI = f(GDP, CPI, M3) \] (1)

where HPI = House Price Index; GDP = Gross Domestic Product; CPI = Consumer Price Index; M3 = Money Supply.

To test the stationarity of each variable, the log form of the variables was used. Log transformation can reduce the problem of heteroscedasticity because it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to twofold difference (Gujarati, 2012).

\[ \ln(HPI_t) = \alpha + \beta_1 \ln(GDP_t) + \beta_2 \ln(CPI_t) + \beta_3 \ln(M3_t) + \mu_t \] (2)

The short and long-run dynamic relationships between the house price index and other variables are estimated by using the ARDL bound testing approach, which was initially introduced by Pesaran et al. (1997). ARDL has numerous advantages. Firstly, unlike the widest method used for testing cointegration, the ARDL approach can be applied regardless of the stationarity properties of the variables in the samples and allows for inferences on long-run estimates, which is not possible under the alternative cointegration procedures. In other words, this procedure can be applied irrespective of
whether the series is I(0), I(1), or fractionally integrated ( Pesaran et al., 1997); and ( Bahmani-Oskooee & Ng, 2002), thus avoid problems resulting from non-stationary time series data (Laurenceson & Chai, 2003). Secondly, the ARDL model takes sufficient numbers of lags to capture the data generating process in a general-to-specific modelling framework (Laurenceson & Chai, 2003). It estimates \((p+1)k\) number of regressions to obtain optimal lag-length for each variable, where \(p\) is the maximum lag to be used, \(k\) is the number of variables in the equation. Finally, the ARDL approach provides robust results for a smaller sample size of cointegration analysis.

3.1 ARDL Model

The model was transformed into Bound Testing approach

\[
\Delta \text{LNHP}t = \alpha + 1 \Delta \text{LNHP}t-1 + 2 \Delta \text{NGDP}t-1 + 3 \Delta \text{CPI}t-1 + 0 4 \Delta \text{NM3}t-1 + i = 1 a_{1i} \Delta \text{LNHP}t-i + i = 0 b_{2i} \Delta \text{NGDP}t-i + i = 0 c_{3i} \Delta \text{CPI}t-i + i = 0 d_{4i} \Delta \text{NM3}t-i + \nu t \tag{3}
\]

Where \(\Delta\) is the first difference operator and \(\nu_t\) is a white-noise disturbance term. The final model represented in equation (3.0) above can also be viewed as an ARDL model. The model indicates house price index performance (HPI) tends to be influenced and explained by its past values, so it involves other disturbance or shocks. From the estimation of UECM, the long-run elasticities are the coefficient of the one lagged explanatory variables (multiplied by a negative sign) divided by the coefficient of the one lagged dependent variable. The short-run effects are captured by the coefficient of the first differenced variables. The null and alternative hypotheses of long-run relationship is defined by:

\[
\begin{align*}
H_0: 1 &= 2 = 3 = 4 = 0 \quad \text{(No cointegration or long-run relationship)} \\
H_0: 1234 &\neq 0 \quad \text{(Cointegration or long-run relationship exist)}
\end{align*}
\]

However, the asymptotic distribution of this F-statistics is non-standard irrespective of whether the variables are I(0) or I(1). For a small sample size study ranging from 30 to 80 observations, Narayan (2004) has tabulated two sets of appropriate critical values. One set assumes all variables are I(1), and another assumes that they are all I(0). If the F-statistic falls below the bound level, the null hypothesis cannot be rejected. On the other hand, if the F-statistic lies exceed the upper bound level, the null hypothesis is rejected, which indicated the existence of cointegration. If, however, it falls within the band, the result is inconclusive.

The short run dynamic relationship is then tested by applying the causality test to examine the causal relation from macroeconomic variables to the house price index as in the following equation:

\[
\Delta \text{LNHP}t = \alpha + i a_{1i} \Delta \text{LNHP}t-i + i = 0 b_{2i} \Delta \text{NGDP}t-i + i = 0 c_{3i} \Delta \text{CPI}t-i + i = 0 d_{4i} \Delta \text{NM3}t-i + \delta \text{ECT}t-1 + \nu t \tag{4}
\]

where ECT is the error correction term. The null and alternative hypotheses for causality test are defined by:

\[
\begin{align*}
H_0: \beta &= 0 \quad \text{(No causality)} \\
H_1: \beta &\neq 0 \quad \text{(Causality exist)}
\end{align*}
\]

3.2 Source of data

All independent variables are acquired straight from world bank database, while NAPIC obtains the dependent variable (HPI) and is analyzed based on time-series data. The sample size includes 20 years of quarterly data, covering a total of 80 observations for both dependent and independent variables from 2000 to 2019.
4. Results

The analysis begins with testing the unit root of every variable for Malaysia. Unit root tests such as Dickey-Fuller (DF) or Augmented Dickey-Fuller (ADF), and the Phillip Perron (PP) tests are carried out to determine the order and stationarity of the series variables and the results shown in Table 1.

Based on ADF unit root test, it is found that LNHPI, LNGDP, LNCPI and LNM3 are non stationary at level, I(0). However at first difference I(1) all the variables are stationary. The unit root test tested by Phillips-Perron (PP) showed that at the level I(0), all variables are non stationary except for LNGDP which is stationary when only intercept was included in the test equation. On the other hand, all variables are stationary at the first difference, I(1).

Table 1. ADF and PP Unit Root Test for Model of Housing Price Index

<table>
<thead>
<tr>
<th>Level</th>
<th>ADF Unit Root</th>
<th>PP Unit Root</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intercepts</td>
<td>Intercept and Trend</td>
</tr>
<tr>
<td>LNHPI</td>
<td>-2.1117</td>
<td>-2.2062</td>
</tr>
<tr>
<td>LNGDP</td>
<td>-4.1530</td>
<td>-4.2263</td>
</tr>
<tr>
<td>LNCPI</td>
<td>-0.2045</td>
<td>-2.7659</td>
</tr>
<tr>
<td>LNM3</td>
<td>-1.8516</td>
<td>0.3422</td>
</tr>
<tr>
<td>First Difference</td>
<td>ADF Unit Root</td>
<td>PP Unit Root</td>
</tr>
<tr>
<td></td>
<td>Intercepts</td>
<td>Intercept and Trend</td>
</tr>
<tr>
<td>LNHPI</td>
<td>-10.6601 ***</td>
<td>-10.5976 ***</td>
</tr>
<tr>
<td>LNGDP</td>
<td>-6.8747 ***</td>
<td>-6.8321 ***</td>
</tr>
<tr>
<td>LNCPI</td>
<td>-7.6962 ***</td>
<td>-7.6446 ***</td>
</tr>
<tr>
<td>LNM3</td>
<td>-6.9913 **</td>
<td>-7.2710 ***</td>
</tr>
</tbody>
</table>

Notes: ***, ** and * denote 1%, 5% and 10% of significant levels, respectively. The optimal lag length is selected automatically using the Schwarz Information Criteria (SIC) for the ADF test, and the bandwidth had been selected by using the Newey–West method for the PP unit root test.

4.1 Detecting the Long-Run Relationship

This tested model must pass the detection of long-run cointegration before proceeding to the short and long-run elasticities. The variables had been tested by using the ARDL cointegration, and the result of this analysis is displayed in Table 2. As a result, the maximum lag was set equal to (6, 6), and the optimum lag order was (2, 4, 1, 5) obtained by Akaike Information Criteria (AIC). The critical value must be compared with the F-statistic, which is if the F-statistics below the bound level, the null hypothesis cannot be rejected. Still, if the F-statistic is greater than the upper bound level, the null hypothesis is rejected, and it shows signifying the existence of cointegration. The finding in Table 2 shows that F-statistics are greater than upper (1) critical bound at the 1%, 5%, and 10% level of significance. This shows that rejection of the null hypothesis of no cointegration considering LNGDP, LNCPI, and LNM3 is a dependent variable. Based on the result, the long-run exists in the variables in this model.

The null hypothesis of no cointegration for housing price index (4.123 > 3.862) is rejected at 5% significant level, given that the F-statistic value was greater than the upper bound critical value and shows the long-run relationship exist between the variables.
Table 2. F-statistic for Testing the Existence of Long Run Equation

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Lag</th>
<th>Lag Order</th>
<th>F-Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARDL(LNHPI</td>
<td>LNGDP, LNCPI, LNM3)</td>
<td>(6, 6)</td>
<td>(2, 4, 1, 5)</td>
</tr>
</tbody>
</table>

Critical Values for F stat

<table>
<thead>
<tr>
<th></th>
<th>Lower I(0)</th>
<th>Upper (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>2.482</td>
<td>3.334</td>
</tr>
<tr>
<td>5%</td>
<td>2.946</td>
<td>3.862</td>
</tr>
<tr>
<td>1%</td>
<td>4.048</td>
<td>5.092</td>
</tr>
</tbody>
</table>

Note: 1. # the critical values are based on Pesaran et al. (2001), case III: unrestricted intercept, and no trend. 2. k is a number of variables, and it is equivalent to 3. 3. *, **, and *** represent 10%, 5%, and 1% level of significance, respectively.

4.2 Diagnostic checking

Before the result was analysed, it is important to check the robustness of the model by adopting several diagnostic tests such as Breusch-Godfrey serial correlation LM test, ARCH test, Jacque-Bera normality test, and Ramsey RESET specification test. All tests showed that the model has the desired econometric properties. Namely, it has a correct functional form, and the model’s residuals are serially uncorrelated and homoscedastic given that the probability value of the t-test is all above than 10% significant.

Table 3. Diagnostic Tests for Model of Housing Price Index

<table>
<thead>
<tr>
<th>Model</th>
<th>(A) Serial Correlation [p-value]</th>
<th>(B) Functional Form [p-value]</th>
<th>(C) Normality [p-value]</th>
<th>(D) Heteroscedasticity [p-value]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARDL(LNHPI</td>
<td>LNGDP, LNCPI, LNM3)</td>
<td>0.44 (0.57)</td>
<td>0.75 (0.39)</td>
<td>2.95 (0.23)</td>
</tr>
</tbody>
</table>

Note: The diagnostic test performed as follows A. Lagrange multiplier test for residual serial correlation; B. Ramsey’s RESET test using the square of the fitted values; C. Based on a test of skewness kurtosis of residuals; D. Based on the regression of squared fitted values. 2.

4.3 Long-Run Coefficients and Short Run Dynamic

After detecting the long-run relationship for Malaysia, both short-run and long-run model were estimated from equation (3), and the maximum order of lag chosen was four. From this, the lag length that minimizes Schwarz Bayesian criterion is selected. The ARDL lag order selected for Malaysia is 2, 4, 1, 5.

Table 4 present the long-run coefficients. The table shows the empirical verdicts of the long-run relationship between the regressors of the proposed ARDL model. There was a positive and significant relationship between gross domestic product (LNGDP) and housing price index (LNHPI). A 1% increase in LNGDP, the LNHPI increased by 0.322%. This finding is in line with Ong (2013) that found that GDP is significant and positively related to the HP I. Besides, according to Chioma (2009), the increase in consumption expenditure also leads to an increase in GDP, which also leads to an increase in housing prices.

The significantly negative relationship was also detected between the consumer price index (LNCPI) and house price index (LNHPI). A 1% increase in LNCPI, the LNHPI decreased by 21.205%. Inflation may affect the housing price in Malaysia as it will affect people’s expenditure for consumption and thus influence their demands for housing. This means that when the prices of goods and services in the country continue to increase dramatically, people will decrease their demand for the housing although it is an important and basic asset to an individuals. Also will leads to a decrease in housing price as supported by the finding of Guo, Wang and Ma (2015).
Table 4. Long-run Coefficient Estimates

<table>
<thead>
<tr>
<th>Dependent Variable = LNHPI</th>
<th>Selected Model: ARDL(2,4,1,5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Coefficient</td>
</tr>
<tr>
<td>LNGDP</td>
<td>0.3221</td>
</tr>
<tr>
<td>LNCPI</td>
<td>-21.2045</td>
</tr>
<tr>
<td>LNM3</td>
<td>6.9762</td>
</tr>
<tr>
<td>C</td>
<td>1.7351</td>
</tr>
</tbody>
</table>

Notes: Std. Error is standard error of the coefficient estimates. Prob. denotes the probability value.

The relationship between the money supply (LNM3) and house price index (LNHPI) was also found to be significant and positive. A 1% increase in LNM3, the LNHPI increased by 6.976%. This result is supported by the study done by Ball (2016) and Adalid and Detken (2007) that looked at the impact of broad money growth on property prices in a number of developed countries. They discovered a strong link between the broad money growth and housing prices.

Table 5. Short-run Error Correction Model Estimates

<table>
<thead>
<tr>
<th>Dependent Variable = LNHPI</th>
<th>Selected Model: ARDL (2, 4, 1, 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Coefficient</td>
</tr>
<tr>
<td>∆LNHPI_{t-1}</td>
<td>-0.2593</td>
</tr>
<tr>
<td>∆LNGDP</td>
<td>0.0401</td>
</tr>
<tr>
<td>∆LNGDP_{t-1}</td>
<td>0.1431</td>
</tr>
<tr>
<td>∆LNGDP_{t-2}</td>
<td>-0.0059</td>
</tr>
<tr>
<td>∆LNGDP_{t-3}</td>
<td>0.0967</td>
</tr>
<tr>
<td>∆LNCPI</td>
<td>4.2192</td>
</tr>
<tr>
<td>∆LNM3</td>
<td>9.4266</td>
</tr>
<tr>
<td>∆LNM3_{t-1}</td>
<td>7.8871</td>
</tr>
<tr>
<td>∆LNM3_{t-2}</td>
<td>0.1138</td>
</tr>
<tr>
<td>∆LNM3_{t-3}</td>
<td>7.3382</td>
</tr>
<tr>
<td>∆LNM3_{t-4}</td>
<td>-3.7733</td>
</tr>
<tr>
<td>ECT</td>
<td>-0.2539***</td>
</tr>
</tbody>
</table>

Notes: Std. Error is standard error of the coefficient estimates. Prob. denotes the probability value. ∆ denotes difference operator.

Table 5 shows the result of the Error Correction Model. The Error Correction Term (ECT) was recorded as -0.2539 and significant. This means that the speed of adjustment from disequilibrium is 25.39 percent in order to return to the equilibrium level in the next period. The result of the causality test based on Wald test statistic to identify the significance of individual macroeconomic in influencing the house prices in the short-run is shown in Table 6. By referring to the probability value of the F-Statistics, the null hypothesis of no causal relation between house prices and both the LNGDP and LNM3 were rejected at 1 percent significance level. This indicates that the changes or behavior in the house price index were significantly influenced by the changes or behavior in the gross domestic product and money supply in the short-run.
Table 6. Short-run relationship between house price and individual macroeconomic movement

<table>
<thead>
<tr>
<th>Macroeconomic Factor</th>
<th>Wald Test F-statistics (Probability)</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆LNGDP</td>
<td>6.7113 (0.0001)</td>
</tr>
<tr>
<td>∆LNCPI</td>
<td>2.24 (0.1154)</td>
</tr>
<tr>
<td>∆LM3</td>
<td>4.9439 (0.0004)</td>
</tr>
</tbody>
</table>

*Notes*: Probability values are shown in parenthesis. ∆ denotes difference operator.

5. Conclusion

This study aims to examine the macroeconomic determinants of the housing price in Malaysia. Based on the empirical results obtained, on one hand, it can be concluded that the gross domestic product, consumer price index and money supply are significant determinants of the house price index in Malaysia in the long-run. On the other hand, both the gross domestic product and money supply are found to have a causal impact on the house price index in the short run. In terms of policy implications, we advocate that the government regulate foreigner investment in housing commodities as it involves speculation, which does not aid in the Malaysian housing market. Furthermore, the government or the private sector should provide more low-cost housing rather than high-cost housing so that those with lower or intermediate incomes can buy and own homes. At the same time, they should ensure that the quality of the house that they offer attained standard quality and safe.

References


NATIONAL INCOME MATTERS AFFECT ON PERSONAL INCOME TAX REVENUE COMPLIANCE IN MALAYSIA? AN E-VIEWS APPROACH

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ABSTRACT

Gross Domestic Income (GDP) and Gross National Income (GNI) often in used to measure the economy to ensure higher income and tax collection in a country. Meanwhile, the purpose of audit enforcement by Inland Revenue Board of Malaysia (IRBM) always aims to higher tax compliance and followed by increase the tax collection. The study therefore attempts to examine the significant determinants of personal income tax compliance in Malaysia. A quantitative approach was taken with secondary data obtained from Inland Revenue Board Malaysia (IRBM) and the Malaysian Economic Planning Unit, from the years 2002 to 2017 were used to generate the results. An EViews approach was test for the proposed hypothesis. The study supported the effect GDP and GNI on Individual Income Tax Collection with a significant of 5%. The results a 1% increase in GDP results in a 603.04% increase in personal income tax collection, ceteris paribus with positive association. Surprisingly, a 1% increase in GNI results in a -395.95% in personal income tax collection, ceteris paribus with negative association. The paper validated and expanded on prior research on the relationship between GDP and GNI to personal income tax revenue compliance. Additionally, it has significant implications for the Ministry of Finance and other relevant local authorities in enhancing the personal income tax collection strategy. Theoretical and practical implication are highlighted.

Keywords: GDP, GNI, tax revenues, tax compliance, Malaysia.
1.0 Introduction

Gross Domestic Income (GDP) and Gross National Income (GNI) often in used to measure the economy to ensure higher income and tax collection in a country. Meanwhile, the purpose of audit enforcement by Inland Revenue Board of Malaysia (IRBM) always aims to higher tax compliance and followed by increase the tax collection. The study therefore attempts to examine the significant determinants of personal income tax compliance in Malaysia.

The primary objective of Government is to collect taxes from different of sources, included individual income tax. The purpose of tax collection can be used by the Malaysian Government to finance the debts and support budgets. As a result, Malaysian Government implemented Self-Assessment System (SAS) in year assessment 2004 to increase personal income tax compliance and the tax collection expected to be increased as well.

2.0 Literature Reviews

2.1 Personal Income Tax Compliance

Tax compliance is a critical issue for tax authorities (Norzilah Hassan, Anuar Nawawi, Ahmad Saiful Azlin Puteh Salin, 2016). The individual income tax compliance in Malaysia defined as submit income tax return form, declare the correct income and relief on a yearly basis, and pay the correct amount of taxes (IRBM, 2021).

Tax compliance has long been a source of concern for both developed and developing countries (Alabede, Ariffin, & Idris, 2011). Personal income tax compliance can be improved by having a well-managed tax system, strict enforcement, and the imposition of penalties on irresponsible taxpayers (Manual & Ang, 2016). Tax collection growth was influenced by an increase in tax compliance.

Statistically, direct tax collection totalled RM 28.4 billion in 2015, accounting for 23.8% of total tax collection, while indirect tax collection totalled RM15.7 billion (56.2%) [Mohd Taufik Mohd Suffian, Siti Marlia Shamsudin, Zuraidah Mohd Sanusi, & Ancella Anitawati Hermawan, 2017]. Additionally, as noted in the IRBM Annual Report, individual income tax collections increased 349% between 2002 and 2017 or RM 7.1 billion in 2002 to RM 31.9 billion in 2017.

In most developed countries, such as Malaysia, welfare is largely provided by the government from taxes income. The tax revenue will be the fund in providing all these facilities to social welfare. National welfare is the provision of a minimal level of social support for citizens without current means to support basic needs, the national welfare expands on this concept to include services such medical, education, and financial aid.

2.2 National Income

The economics crisis had deteriorated government finances in many countries, included Malaysia. Malaysian Government seeks ways to either cut spending or to increase the tax revenues. Tax treaties such as income tax allowance or tax exemption given to investors or foreigners. This is hoping them to invest in the country and boost up the Malaysian economics. In the other way, however, cutting the government spending will tighten out the Malaysian economy and causing economics recession. Therefore, the government chooses its tax instruments to maximize economics growth.

GDP is used to calculate the value of a country’s goods and services produced. GDP is calculated using national output, expenditure, and income. It is defined as a country’s total value of goods and services produced. The following is a well-known formula for GDP:
GDP = C + I + G + X − M … (1)
where C denotes consumption, I denotes investment, G denotes government expenditure, X denotes exports, and M denotes imports.

In Malaysia, the development expenses show an increasing from RM 35.069 million in year 2002 to RM 43.0 billion in year 2017. As an under developing country, Malaysia Government try to maximize the social welfare. Additional, to provide all the facilities to social, Inland Revenue Department or IRB currently, play a major in collecting income taxes.

Figure 1: Tax-to-GDP ratios in Asian and Pacific economies, including and excluding social security contribution (2019)

Tax to GDP ratio is often discussed among policy makers. A tax to GDP ratio is a tax revenue collected by a nation compared to gross domestic products and used to determine how well a nation’s government directs its economic resources. Reality, Malaysian Tax to GDP ratio in Figure 1 was still not encouraging because Tax to GDP ratio of more than 15 percent is the tipping point for a key ingredient for economic growth (OCED, 2021)

Gross National Income (GNI), however, is used to determine a country’s income, as well as the incomes received by residents, businesses, and any returns on foreign investment. These earnings are referred to as the components of employment and investment profit components. Moreover, GNI is used to calculate the incomes earned by residents who work abroad but excludes income earned by foreign nationals in the country. The following equations summarise the difference between GNI and GDP:

\[
GNI = GDP + [(A) - (B)] \quad \ldots (2)
\]
where, “A” refers to income earned by citizens and businesses abroad and “B” refers to income remitted to home countries by foreigners living in the country.
2.3 Underlying Model

Fischer Model pointed out economic, sociological, and psychological variables into a comprehensive tax compliance model in Figure 2. The model focuses on demographic variables, opportunity noncompliance as well as attitudes and perceptions, in addition to tax system structure factors such as similar with the Allingham & Sandmo Model. National income, therefore, important to income tax compliance and use in this study.

Figure 2: Fischer et al. (1992) Taxpayer Compliance Model.

2.4 Conceptual framework

The conceptual framework for this study is depicted in Figure 3. This framework is composed of two components: independence variables (IVs) and a dependent variable (DV).

Figure 3: Conceptual Framework

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>DEPENDENT VARIABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Domestic Product</td>
<td>Income Tax Revenue Compliance</td>
</tr>
<tr>
<td>Gross National Income</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Author

2.5 Hypotheses Development

Research proves the shadow economy that leads to the existence of opportunity for distortions in resource allocation in the underground economy (Din, 2017). Every country will always ensure a high national income. Whether higher national income will increase a country's income tax collection. As a result of this, the research has generated the following hypotheses:

H1: Gross Domestic Product is significantly related to personal income tax revenue compliance in Malaysia.
H2: Gross National Income is significantly related to personal income tax revenue compliance in Malaysia.
3.0 Data and Method

This study used quantitative analysis to examine hypotheses based on secondary data from IRBM and the Malaysian Economic Planning Unit. GDP (Figure 4) and GNI (Figure 5) are presented in table form. The data are representative of the entire population of personal income tax collected in Malaysia and are not representative of a sample. To obtain a valid result, the researcher used secondary data spanning the years from 2002-2017 (16 years). It is a lengthy period that is ideal for conducting tax research; in fact, the strategic assessment includes the expected operational environment over the next 5 to 15 years (IMF, 2021).

Figure 4: Gross Domestic Product (GDP) in Malaysia, 2002-2017

Source: Department of Statistics, Malaysia

Figure 5: Gross National Income (GNI) in Malaysia, 2002-2017

Source: Department of Statistics, Malaysia

There are various methods that have been used in previous research, but based on the researchers’ knowledge, this study first focuses on Eviews approach in income tax research. We used the computer statistics packages EViews9 to perform an Ordinary Least Squares (OLS) analysis. It includes a number of features for viewing residues in real time and determining serial correlations.

4.0 Results

4.1 Description Statistics

Before detailing the econometric estimation, it is useful to briefly explain the descriptive statistics of those variables under consideration. Detailed explanations of the variables and data sources are provided in Table 1.
Table 1: Data source and Description of the Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Unit</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>Gross Domestic Products</td>
<td>Ringgit Malaysia</td>
<td>Economic Planning Unit of Malaysia</td>
</tr>
<tr>
<td>GNI</td>
<td>Gross National Income</td>
<td>Ringgit Malaysia</td>
<td>Economic Planning Unit of Malaysia</td>
</tr>
<tr>
<td>REVENUE</td>
<td>Individual Income Tax Revenue</td>
<td>Ringgit Malaysia</td>
<td>Inland Revenue Board of Malaysia</td>
</tr>
</tbody>
</table>

Table 2 show the result of the descriptive statistics. It is important that the research to use raw data of the variable and not the transformed data to launch the descriptive data. There have 16 observations to each variables. The value of 3 in kurtosis mean normal distribution, and leptokurtic in both GDP and GNI. The value of 0 in skewness mean normal skewness, and positive skewness in both GDP and GNI. The Jarque-Bera statistics measure the different between the skewness and kurtosis of the series with those from the normal distribution. The probability is the probability that a Jarque-Bera statistic exceeds (in absolute value) the observed value under the null hypothesis, that is a small probability value leads to the rejection of the null hypothesis of a normal distribution. All of the probability of Jarque-Bera are above the significant level of point, which is 0.5. Therefore, with respect to all the research variables, we cannot reject the null hypothesis and all variables are normality distributed curve and have normal distribution.

Table 2: Descriptive Statistics of variables in the Model

<table>
<thead>
<tr>
<th></th>
<th>GDP</th>
<th>GNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>8.32E+11</td>
<td>8.12E+11</td>
</tr>
<tr>
<td>Median</td>
<td>7.99E+11</td>
<td>7.78E+11</td>
</tr>
<tr>
<td>Maximum</td>
<td>1.17E+12</td>
<td>1.15E+12</td>
</tr>
<tr>
<td>Minimum</td>
<td>5.54E+11</td>
<td>5.37E+11</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>1.91E+11</td>
<td>1.83E+11</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.270897</td>
<td>0.312676</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.953551</td>
<td>2.108281</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>0.925731</td>
<td>0.790819</td>
</tr>
<tr>
<td>Probability</td>
<td>0.629477</td>
<td>0.673404</td>
</tr>
<tr>
<td>Sum</td>
<td>1.33E+13</td>
<td>1.30E+13</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>5.48E+23</td>
<td>5.05E+23</td>
</tr>
<tr>
<td>Observations</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3 show the Correlation Analysis in this study, with the high correlation value between 0.991432 to 0.998576. The multiple graphs presented in Figure 6 are also curve upwards from left to right. These mean all the variables are positive correlated with each other.

Table 3: Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>GDP</th>
<th>GNI</th>
<th>REVENUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>1</td>
<td>0.998576</td>
<td>0.991432</td>
</tr>
<tr>
<td>GNI</td>
<td>0.998576</td>
<td>1</td>
<td>0.984942</td>
</tr>
<tr>
<td>REVENUE</td>
<td>0.991432</td>
<td>0.984942</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 6: Line & symbols in multiple graphs
4.2 The Regression Model

The regression model (Eq. (2)) is intended to quantify the effect of national income on tax revenue under Malaysia’s Personal Income Taxation System. The following equation was proposed for multiple regression:

\[
\text{revenue}_\text{2002-2017} = c + \beta_1 \text{GDP}_\text{2002-2017} + \beta_2 \text{GNI}_\text{2002-2017} + \epsilon
\]  

... (2)

where, \(\text{revenue}_\text{2002-2017} = \) individual income tax collection in Malaysia from year 2002 to 2017, \(\text{GDP}_\text{2002-2017} = \) Gross Domestic Products in Malaysia from year 2002 to 2017 (in constant 2010 prices), \(\text{GNI}_\text{2002-2017} = \) Gross National Income in Malaysia from year 2002 to 2017 (in constant 2010 prices), and lastly \(\epsilon = \) Error term

Eq. (2) examined the GDP and GNI to Income Tax Revenue in Malaysia between 2002 to 2017. The equation was transformed in this study by computing the natural logarithms of the dependent and independent variables, resulting in the log transformation form shown in Eq. (3).

\[
\ln\text{revenue}_\text{2002-2017} = c + \beta_1 \ln\text{GDP}_\text{2002-2017} + \beta_2 \ln\text{GNI}_\text{2002-2017} + \epsilon
\]  

... (3)

where, \(\ln\text{revenue}_\text{2002-2017} = \) Log transformation of individual income tax collection in Malaysia from year 2002 to 2017, \(\ln\text{GDP}_\text{2002-2017} = \) Log transformation of Gross Domestic Products in Malaysia from year 2002 to 2017 (in constant 2010 prices), \(\ln\text{GNI}_\text{2002-2017} = \) Log transformation of Gross National Income in Malaysia from year 2002 to 2017 (in constant 2010 prices), and \(\epsilon = \) Error term

4.3 The ordinary least square method using EViews

The proposed hypotheses were tested and validated using the Ordinary Least Squares (OLS) Method. This study examined five direct association hypotheses in total. \(R^2\) is used to determine the model’s predictive power. The \(R\)-squared value was 98.70% in this study. In this sense, interactions
accounted for 98.70% of the variance represented in personal income tax revenue compliance. As illustrated in Figure 7, the probability of F-statistic was 0, which was less than 5% of the significance level.

The result revealed that the coefficient for GDP to income tax revenue was 6.030414, indicating a positive relationship. GDP’s t-statistic was 4.598292, which exceeded the recommended value of 1.96 (<0.05) and the p-value was 0.0005 (P<0.05). At a 95% confidence level, the results were significant. In short, H1 was accepted. Furthermore, the coefficient for the GNI to the income tax revenue was -3.959567, indicating a negative association. GNI had a t-statistic of -2.960886, which was greater than 1.96 (<0.05). The p-value was 0.0110 (P<0.05), and it was significant at the 95% confidence level. As a result, H2 was accepted.

Figure 7: Results using Least Squares Method

4.4 Results Discussion

The result’s findings have generated several significant points for discussion in this section. Both GDP and GNI were significant at 5% level to personal income tax revenue in Malaysia. GDP has a positive relationship with income tax revenue, while GNI has a negative relationship with tax revenue.

Gross Domestic Product (GDP) incidence all contributed to personal income tax compliance in Malaysia. The policy makers cannot deny that GDP is a critical indicator of a country’s economic development. A 1% increase in GDP results in a 603.04%, increase in tax collection, ceteris paribus. GDP is critical for the Government and other related agencies, such as the Ministry of Finance (MOF), the Ministry of International Trade and Industry (MITI), and the Economic Planning Unit (EPU), to ensure that GDP binds to enable income tax collection. Due to Covid-19 pandemic on economic growth recently, the study expected personal income tax collection will decrease these few years, regardless the highly effort audit enforcement by IRBM.

GNI is a substitute for GDP in determining a country’s wealth. It is regarded as additional foreign sources revenue to the GDP. A 1% increase in GNI results in a 395.95%, decrease in tax collection. Although the effects of GDI on personal income tax revenue are contradictory, however, indirectly cause the effect on Foreign Direct Investment (FDI). As FDI increased from RM 254,955 million in 2008 to RM 595,497 million in 2017, while income tax exemptions will result in a decline in total tax collection. In addition, economic development in the nearby area will also benefit the local people even without income tax exemption.
5.0 Conclusion

The study contributes for future research on tax revenue and economic development in Eviews approach. The findings lead us to conclude that GDP was significant in increasing individual income tax collection in Malaysia. The findings of this study contribute to the body of knowledge on tax compliance by identifying significant determinants that are likely to affect personal income tax compliance, instead of enforcement by IRBM. It has significant implications for the Ministry of Finance and other relevant local authorities in enhancing the personal income tax collection strategy and indicates the GDP as the critical role of tax revenue collection in shaping the country’s economy.

References


Economic Planning Unit, Malaysia, Malaysian Economic in Figure, Various Issues.


AN URBAN HOUSEHOLD LIVING WAGE: A CONCEPTUAL OVERVIEW

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ABSTRACT

As Malaysia steps closer to become a high-income nation, it is time for all citizens to aspire to at least a minimum acceptable standard of living. The rising cost of living poses difficulties for households to maintain an adequate standard of living. This study aims to investigate the living wage of household in Kota Kinabalu and to determine the factors that influence the living wage. In this context, a household refers to an individual or a group of individuals, whether related or not, who live together in the same house and make economic decisions together. The living wage calculation applied the Anker Formula, Ordinary Least Squares (OLS) are used to determine the relationship between the variables. For data collection, this study employs a quantitative approach strategy in which self-developed questionnaires are distributed to respondents around Kota Kinabalu. The pilot study results indicates that the total living wage needed for the household with different number of full-time workers is slightly different. The range of living wage for one full-time worker were between RM1400 to RM1600 monthly, RM1700 to RM1800 monthly for the two full-time worker household and RM1000 to RM1200 monthly for the three full-time worker household. Previous literature shows that housing cost, food cost, transportation cost, communication cost, healthcare cost, education cost, household size, number of full-time workers and savings are the factors that significantly influenced the living wage. On this basis, the authorities should emphasize more on these factors when setting the minimum wage policy particularly in the urban area such as Kota Kinabalu, Sabah.

Keywords: cost of living; households; standard of living; living wage; Anker Formula

1. Introduction

Urbanization is important for a country's economic performance. As urbanization rapidly transform people's lives, urban policymakers and planners play an essential part in ensuring that urban expansion and the economic growth it brings are both efficient and inclusive, allowing all residents to benefit from the opportunities that cities offer (World Bank, 2015). Malaysia is currently one of the most urbanized countries in East Asia, as well as one of the world's most rapidly urbanizing regions (Pletcher, 2020). Most Malaysians, especially those living in cities, face a variety of issues, including the rising of living costs, market and fuel price fluctuations, and crime. Over the last ten years, the urban population in Malaysia has increased from 70.91% in 2010 to 76.61% in 2019 (Department of Statistics Malaysia, 2020). The population in the urban areas is predicted to grow every year as people from the rural areas are actively migrating to the urban areas in search of a better life and to obtain more employment opportunities.

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Massive rural-urban migration necessitated by industrialization and rapid urbanization caused the emergence of a new social class—the “new poor” or “urban poor” (Leng, Samsurijan, Gopal, Malek, & Hamat, 2018). Although it is undeniable that urbanization aids in the creation of better opportunities for income accumulation, it also leads to the “urban poor” scenario that affects the city dwellers. These issues concern city dwellers, particularly those from lower-income groups. Even if they are able to find work in the urban areas, they are still struggling to make ends meet because surviving in the city requires a lot of money.

The DOSM (2020) has changed the national PLI from RM 2,141 in 2016 to RM 2,208 in 2020 based on the 2019 Poverty Line Income (PLI) methodology. However, Sabah's PLI is greater than Malaysia's, which was RM 2,514 in 2016 and RM 2,537 in 2019.

<table>
<thead>
<tr>
<th>Items</th>
<th>National PLI</th>
<th>2016</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>RM 2,141</td>
<td></td>
<td>RM 2,208</td>
</tr>
<tr>
<td>Sabah</td>
<td>RM 2,514</td>
<td></td>
<td>RM 2,537</td>
</tr>
</tbody>
</table>

Source: Department of Statistics Malaysia, 2020

Having a sufficient living wage may keep a family out of poverty, especially in urban areas. Earning a living wage can help to alleviate financial stress. This can lead to improved health, better work values, better child growth and development, and reduced barriers to socialize with the community. A person is said to be in a comfortable financial situation when they do not need to borrow money to make ends meet and can save some money at the end of the month (Agensi Kaunseling dan Pengurusan Kredit, 2018).

The government has taken initiatives to help people get out of poverty. The government of Sabah, for example, has a long-term strategic development strategy called Sabah Land Empowerment Animals People (LEAP) 2016-2035, which aspires to eradicate poverty by 2035 (Asadullah & Joseph, 2018). Aside from that, the Bank Negara Malaysia (BNM) has introduced the living wage concept, which is used to assess the amount of income necessary to provide people with a decent standard of living in any part of the country.

A living wage is more than just about a minimum income necessary that allows a person to meet basic needs like housing, food, transportation, and other essential necessities; it also allows them to participate in society. Participation in society implies being able to finance a journey to visit relatives and friends over the holiday season, as well as the ability to purchase gifts for family members on special occasions such as birthdays and weddings (Chong & Khong, 2018).

One of the reasons individuals are struggling to afford a decent level of living in the cities is the rising expense of living (Yao, Parker, Arrowsmith, & Carr, 2017). Personal preferences and location play a big role in determining the cost of living. Households need to pay different costs for the goods and services depending on where they live (Bourne, 2018). Living in Kota Kinabalu, Sabah’s capital city, for example, is more expensive than in smaller towns. The living wage is an estimate of how much a household would need to earn to cover all their basic needs and maintain a good standard of living.

There has been no assessment of living wages in Kota Kinabalu yet, even though some cities in Peninsular Malaysia have done so. Therefore, it is essential to conduct this study to investigate the living wage for household in Kota Kinabalu and to determine the factors that influence the living wage. The research focus for this study is Kota Kinabalu, the state capital of Sabah, which includes Sepanggar, Menggatal, Likas, Inanam, Luyang, Kepayan, and Tanjung Aru. Figure below is the conceptual framework of this study.
2. Literature Review

The terms living wage, basic needs and cost of living are broadly used in this study. A living wage is a theoretical level of income that allows a household to meet basic needs such as decent housing, food, and other essentials. The term "basic needs" refers to a list of items that humans require to meet basic requirements and live a decent life (Chiappero-Martinetti, 2014). The cost of living is linked to wages, and it is the amount of money required to meet basic essential expenses. Expenses are rising mostly because of inflationary rises (Driscoll & Saulnier, 2020). A living wage should be adjusted for inflation so that it can cover the cost of living in any area. Driscoll and Saulnier (2020) stated that the living wage is estimated to show how much an individual should earn to meet all their essential needs and allow their families to live in dignity and with an acceptable standard of living.

In this study, the Anker formulae are used as a guideline in assessing the living wage. The Anker approach, developed by Richard and Martha Anker (2017) to compute a living wage, has gained widespread acceptance, and is now used to estimate living wages all around the world. This claim is supported by Rainforest Alliance (2018) which stated that the Anker methodology has been used to compute living wages in rural, urban, and peri-urban locations around the world, resulting in global living wage action. The primary feature of the Anker methodology is that it calculates the amount of money needed to maintain a basic but decent standard of living in a given area and period (Dawani, Sayeed, Anker, & Anker, 2019).

This study suggests that housing costs, food costs, transportation costs, communication costs, healthcare costs, education costs, household size, number of full-time workers in the household, and savings for unforeseen catastrophes are all factors that may influence living wage.

2.1 Housing Cost

One of the most important factors in determining a living wage is the cost of housing. This statement is supported by (Anker, 2011; Glasmeier, 2017; Inchiem et al., 2020), where they include housing costs in their living wage estimates. Additionally, Hong Kong emphasised that the most significant cost of living was accommodation or housing (Living Wage Foundation & ACCA, 2017). According to Bourne (2018), housing costs are the single largest expense for most households (rent or owner-occupied housing costs), and they are anticipated to be especially significant for urban households. Based on the HES report in Malaysia, housing expenses are the greatest household expenditure with a proportion of
23.6 percent, or RM 1,068 per month in 2019 (Department of Statistic Malaysia, 2019). According to Anker & Anker (2017), utility expenditures such as water, electricity, and gas are included into the estimation of housing costs.

Poor households often spend a larger amount of money on housing and are more likely to value lower housing costs over better amenities (Bourne, 2018). According to Inchiem et al. (2020), the ideal kind of housing would provide enough space for all members of a household to live comfortably. In addition, according to a BNM report published in 2016 in Kuala Lumpur, Malaysia, single people would rent a room, married couples without children would rent a one-bedroom apartment, and married couples with two children would rent a three-bedroom apartment (Chong & Khong, 2018).

As Malaysia moves closer to becoming an urbanised country, more people are migrating from rural to urban areas in search for a better job opportunity, resulting in a greater demand for housing in the city. Therefore, the cost of housing is an important factor in calculating the living wage.

2.2 Food Cost

Food expenditures are certainly one of the components in determining a basic standard of living in any assessment of living wages around the world (Inchiem et al., 2020). According to Anker & Anker (2017), food is nearly always the highest expenditure for a worker and his or her family in a developing country. This claim is reinforced by Chong and Khong (2018), who assessed the living wage in Kuala Lumpur based on the assumption that food is one of the greatest expenditures.

According to a report by The Edge Malaysia (2020), the average monthly grocery expenses for a person is RM 469. Furthermore, according to DOSM, food expenses are the second greatest household expenditure, accounting for 17.3% of total family spending, or RM 784 per month in 2019 (Department of Statistic Malaysia, 2019). Food away from home (FAFH) should also be considered when determining the cost of food. This is because, rather than eating at home, people in urban areas are more likely to eat out more often due to a busy life (Chong & Khong, 2018). Therefore, the cost of food plays an important role in determining a living wage.

2.3 Transportation cost

Transportation is an essential everyday need since it allows a person to move from one location to another. These include daily work and school journeys, market visits, trips to the bank and healthcare centre, travel required to complete other vital chores, transportation connected to leisure activities, and visiting relatives (Telkki, 2015).

Access to a good transportation system is a key feature in the era of urbanisation (Inchiem et al., 2020). Transportation is one of the top three most expensive commodities for people of all income levels (Rashid, Sulaiman, & Rahizal, 2018). As Malaysia advances towards urbanization, demand for transportation has increased, particularly in urban areas (Inchiem et al., 2020). Borhan, Ibrahim, Syamsunur, and Rahmat (2019) supported this claim by stating that increased in transportation demand is proportionate to the rapid migration of people from rural to urban areas.

Despite the availability of numerous public transportation options in Malaysia, such as public buses, taxis, light rapid transit (LRT), rapid mass transit (MRT), and the latest trend of e-hailing, most Malaysians tend to rely more on private vehicles to travel from one location to another (Inchiem et al., 2020). With the increase in private vehicle ownership and car loans, households are paying at least five times more than they would if they used public transportation on a regular basis (The World Bank, 2019). According to the HES report in Malaysia, 13.5 percent of household income, or RM 611, is spent on transportation monthly (Department of Statistic Malaysia, 2019). Thus, to calculate the living wage, the cost of transportation is a significant factor to consider.

2.4 Communication cost

Communication is a very important human need as well as a basic human right (Sen, 2015). The importance of ‘technological requirements,’ such as mobile phones or network connectivity, has been
considered as 'essential for employment,' but has occasionally been overlooked in living wage estimations (Living Wage Foundation & ACCA, 2017). The cost of communication should be included into the living wage calculation. This allegation is supported by (King & Waldegrave, 2012; Telkki, 2015), who consider communication costs in their living wage calculations for New Zealand and Finland, respectively. In comparison to rural areas, the cost of communication is usually higher in urban areas (Anker & Anker, 2017).

According to King and Waldegrave (2018), communication costs include mail and phone/mobile expenses, landline rental plus toll calls for family contact in the free calling area, call costs for required calls near or distant from home, and internet expenses. Furthermore, because of the internet's global relevance as a source of information and a communication tool, internet subscription expenses, such as broadband connections, should be included in the calculation of basic needs (Telkki, 2015). Thus, the communication cost should be included into the living wage calculation in order to allow households to participate fully in cultural and social life, whether online or offline, as a fully involved member of society.

2.5 Healthcare Cost
Healthcare is regarded as a human right around the world (Anker & Anker, 2017). In calculating the living wage in Klang Valley, the Social Wellbeing Research Centre (2019) includes essential healthcare costs such as minor illnesses and injuries, dental treatment, and basic first aid supplies. Households seek health because it helps them feel better and allows them to go to work and earn money (Koris, et al., 2019).

In most nations, healthcare services are provided free of charge or for a minor administrative or other fee; but, in developing countries, free public services may be of poor quality or difficult to obtain (Telkki, 2015). Inchiem et al., (2020) emphasised that the main difference between private health service and public health service is that the public sector is fully funded by the government, while the private sector charge fees for their services.

Furthermore, as the number of children in the household grows, so does the amount of money spend on healthcare (Lin & Bernstein, 2008). The Social Wellbeing Research Centre (2019) agrees that the cost of healthcare for households in Klang Valley rises as they start to have children. Thus, healthcare costs are included into the living wage calculation to ensure that households receive adequate healthcare.

2.6 Education Cost
Education is a must to ensure one's ability to compete and prosper in today's globalised labour market (Tiessen, 2015). According to Telkki (2015), education is an important component of poverty alleviation in developing countries. Most governments generally provide free primary and secondary education (Telkki, 2015; Anker & Anker, 2017). Even though primary and secondary education are generally free, households would still spend money on education. For instance, extra classes such as tuition is often charged, as are the costs of exercise books and writing supplies; all costs associated with education should be appropriately included in the estimation of living wage (Telkki, 2015). Costs for higher education institutions, private schools, and other fees such as music and dancing lessons should also be included (Hamid, Son, & Ismail, 2019).

Individuals' ability to generate income may be limited by their level of education, according to Hamid et al. (2019). Individuals who possess only a secondary education earned slightly less than those with a higher education, with only a slight increase over time (The World Bank, 2019). According to Inchiem et al. (2020), someone with a bachelor's degree earns 3.6 times more than someone without a bachelor's degree. Moreover, according to BNM, 73% of individuals earning less than the living wage have completed secondary, primary, or no education at all, and 72% of those earning more than the living wage have completed tertiary education (The World Bank, 2019).

Since the job market in Malaysia especially in the urban areas has become so competitive, it is necessary to have a good education (Agensi Kaunseling dan Pengurusan Kredit, 2018). Individuals who
reside in urban areas are shown to spend more on education than those who live in rural areas (Inchiem et al., 2020). Households or children that have not received appropriate education are forced to live in miserable circumstances (Telkki, 2015). According to DOSM, parents nowadays emphasize the value of their children's education and budget monthly out-of-school spending for education, such as tuition classes (Department of Statistics Malaysia, 2020). Thus, while evaluating the appropriate value of living wages, the cost of education should be included.

2.7 Household Size
The size of the household or family is one of the most important factors in determining household expenditures (Latimaha, Bahari, & Ismail, 2018). According to Inchiem et al. (2020), since every household has a different family size, there will be a different cost of living for every household or individual. This claim is backed up by Anker and Anker (2017), who suggest that household size has a considerable impact on spending because more children require more accommodation, food, healthcare, and education.

Since a living wage is a household wage, determining the household size to be supported by a living wage is important (Anker & Anker, 2017). There is still no consensus on the ideal household size in calculating the living wage, however four persons in a household is a general assumption (Inchiem et al., 2020). Similarly, according to Anker and Anker (2017), the standard household size used to calculate the living wage is two adults and two dependents. The larger the size of the household, the higher the living wage estimate (Anker & Anker, 2017). Therefore, household size must be considered as one of the factors that may influence living wage.

2.8 Full-Time Worker
The number of income recipients influenced household income and where the households are located in the allocation (Hamid, Son, & Ismail, 2019). The number of full-time workers per household is anticipated to provide support for members of the household; in large countries, it must be country or region specific, and it usually varies between rural and urban areas (Anker & Anker, 2017).

According to Anker and Anker (2017), most developing countries' living wage approaches presume that the number of full-time workers per household is either one or two workers per family. In New Zealand, for example, the living wage level for a household is determined based on the assumption that there are two income earners, one working full-time and the other part-time (King & Waldegrave, 2012). In 2016, the average American household with two working adults and two children needed to work nearly four full-time minimum wage jobs to make ends meet (Chong & Khong, 2018). Furthermore, to ensure that they can make ends meet, the majority of Malaysia's lower-income group take on additional part-time job or work overtime.

According to the Khazanah Research Institute, in 2014, 50% of low-income households in Malaysia had only one income earner, 59% of middle-income households had at least two income earners, and roughly 75% of high-income households had at least two income workers (Inchiem et al., 2020). This study suggested that the number of full-time workers in a household influence the household income.

2.9 Savings
Savings is important in the event of any unanticipated incident, such as illness, accidents, unemployment, or emergency expenditures, as it serves as a safety net and ensures that individuals make a decent wage and are not easily thrown into debt and poverty (Telkki, 2015; Anker & Anker, 2017; Chong & Khong, 2018; Inchiem et al., 2020). The United Kingdom proposed that a living wage should include some emergency savings (Chong & Khong, 2018).

According to Anker and Anker (2017), the Global Living Wage Coalition's (GLWC) definition of a living wage necessitates a "provision for unexpected events." As evidence, in the New Zealand living wage estimation, savings are required for emergencies and retirement (King & Waldegrave, 2012). Similarly, according to Telkki (2015), employees should be paid enough so that they can save
some amount of money, which can be added into wage estimates as a 10% extra component. Furthermore, savings are considered into the assessment of a living wage in Toronto because they are required for any unexpected costs, such as maintenance, healthcare expenses, and even unemployment (Mackenzie & Stanford, 2008). Aside from that, the estimated living wage in Kuala Lumpur also includes a small emergency fund to cover any unforeseen expenses (Chong & Khong, 2018). Therefore, savings is considered as one of the predictor variables in this study.

3. Data and Method

This study makes use of quantitative approaches strategy in which self-developed questionnaires are distributed to respondents around Kota Kinabalu. Due to the corona virus outbreak, a google form survey was designed to aid in data collection for this study. Kota Kinabalu Town Centre, Sepanggar, Menggatal, Likas, Inanam, Luyang, Tanjung Aru, and Kepayan are the areas studied in this study. A single questionnaire was sent to each household. The data for this study was analyzed using the Statistical Package for Social Science (SPSS) version 26 software.

The Anker formula is used to achieve first objective of the study, which is to investigate the living wage in Kota Kinabalu. The first component of the Anker formula determines the cost of providing a basic but decent lifestyle for a household or a worker. The households’ total cost of living and savings are then divided by the number of full-time workers in each household. This is to see if the workers are getting paid the estimated living wage or not. The entire tax paid by households is then added to ensure that workers earn enough to maintain a basic but acceptable living standard. Figure 3.1 illustrates the formula for calculating a living wage that are adopted in this study.

![Figure 3.1: Living Wage Formula](source.png)

To achieve the second objective of the study which is to determine whether the independent variables in this study does influence the dependent variable or not, the ordinary least-squares (OLS) model is implemented. The OLS model that is applied in this study is as follows:

\[ LW = \alpha + \beta_1HC_1 + \beta_2FC_2 + \beta_3TC_3 + \beta_4CC_4 + \beta_5HCC_5 + \beta_6EC_6 + \beta_7HS_7 + \beta_8FW_8 + \beta_9S_9 + \mu \]  

where:

- \( LW \) = Living wage for household
- \( \alpha \) = Constant
- \( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9 \) = Estimated parameters
- \( HC_1 \) = Housing cost
- \( FC_2 \) = Food cost
- \( TC_3 \) = Transportation cost
- \( CC_4 \) = Communication Cost
- \( HCC_5 \) = Healthcare cost
- \( EC_6 \) = Education cost
- \( HS_7 \) = Household size
- \( FW_8 \) = Full-time workers
- \( S_9 \) = Savings
- \( \mu \) = Error term
4.0 Pilot Test Results

There are a total of 27 respondents participated in the pilot test. Table 3.1 below presented the demographic profile of the respondents participated in the pilot test. 81.5% of the respondents are female and most of the respondents are between 21 – 25 years old with a total of 37%. Besides that, almost half of the respondents are living in Inanam area with a total of 48.1% (13 respondents). Apart from that, from the 27 respondents, 12 respondents (44.4%) possessed a bachelor’s degree, 8 respondents (29.6%) have completed STPM or obtained Diploma, 3 respondents (11.1%) finished SPM or has Certificate, and 4 respondents (14.8%) completed SPR or PMR or PT3. Moreover, respondents that are married or still single shared the same percentage which is at 48.1%. Majority of the respondents are living alone as seven of them which is 25.9% have household size of one individual. Furthermore, 13 of the respondents (48.1%) have one full-time workers in their household which means they are living alone and are working to support themselves, 10 (37%) and 4 (14.8%) of the respondents has two and three full-time workers in their household, respectively.

Table 3.1 Demographic Profile of Respondents

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Categories</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>5</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>22</td>
<td>81.5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27</td>
<td>100.0</td>
</tr>
<tr>
<td>Age</td>
<td>16 – 20</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>21 – 25</td>
<td>10</td>
<td>37.0</td>
</tr>
<tr>
<td></td>
<td>26 – 30</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>31 – 35</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>36 – 40</td>
<td>2</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>41 – 50</td>
<td>5</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>51 and above</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27</td>
<td>100.0</td>
</tr>
<tr>
<td>Residential Area</td>
<td>Kota Kinabalu Town Centre</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>Sepanggar</td>
<td>4</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>Menggatal</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Likas</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Inanam</td>
<td>13</td>
<td>48.1</td>
</tr>
<tr>
<td></td>
<td>Kepayan</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>Tanjung Aru</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27</td>
<td>100.0</td>
</tr>
<tr>
<td>Education Level</td>
<td>SRP / PMR / PT3</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>SPM / Certificate</td>
<td>3</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>STPM / Diploma</td>
<td>8</td>
<td>29.6</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s Degree</td>
<td>12</td>
<td>44.4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27</td>
<td>100.0</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married</td>
<td>13</td>
<td>48.1</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>13</td>
<td>48.1</td>
</tr>
<tr>
<td></td>
<td>Divorce / Widow / Widower</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27</td>
<td>100.0</td>
</tr>
<tr>
<td>Household Size</td>
<td>1</td>
<td>7</td>
<td>25.9</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The first objective of this study is to investigate the living wage of households who live in Kota Kinabalu. It is found that the household with one full-time worker (1FW) would need a living wage between RM 1400 to RM 1600 monthly. The housing cost were the priority expenditure for the 1FW household followed by transportation cost and food cost.

For the two full-time workers’ (2FW) household, the monthly living wage is between RM1700 to RM1800 monthly. Same as the 1FW household, the highest expenditure for the 2FW household is the housing cost. However, differ from the 1FW household, the second large expenditure for the 2FW household are the cost of food then followed by the transportation cost.

Next, the living wage for the three full-time workers’ (3FW) household was between RM1000 to RM1200 monthly. Unlike the 1FW and 2FW households, the 3FW household tend to spend more on the food cost followed by the housing cost and transportation cost. Each of the worker in the 3FW household need to earn at least RM1000 to RM1200 monthly.

It is reasonable to expect more than one individual in a household to work and support the household financially. The three largest monthly expenditure for all the three household categories is the housing cost, followed by the food cost, and transportation cost. Overall, the living wage needed for a worker living in Kota Kinabalu area are between RM 1400 to RM1500 per month to be able to afford a minimum satisfactory living standard.

Table 3.2 below presented the result for the second objective of this study which is to determine the factors that influence the living wage in Kota Kinabalu. As illustrated in table 3.2, only four relationships are found to be significant with a p-value of less than 0.005. HC, TC, FW, and S has a statistically significant impact on the living wage. Looking at the unique individual contributions of the independent variables, the results shows that HC ($\beta=0.606$, $t=3.043$, $p=0.007$), TC ($\beta=1.011$, $t=3.484$, $p=0.003$), FW ($\beta=-642.649$, $t=-3.612$, $p=0.002$) and S ($\beta=0.1.416$, $t=2.993$, $p=0.008$) does predict the living wage. Based on the $\beta$ coefficients, the regression model for this study is as follows:

$$LW = 1033.745 + 0.606HC + 0.743FC + 1.011TC + 0.511CC + 0.233CC + 0.921EC + 48.059HS - 642.649FW + 1.416S + \mu$$

### Table 3.2 Hypothesis Testing for Direct Relationship & Coefficients

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>$\beta$</th>
<th>t-value</th>
<th>p-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>HC $\rightarrow$ LW</td>
<td>0.606</td>
<td>3.043</td>
<td>0.007</td>
<td>Accepted</td>
</tr>
<tr>
<td>H2</td>
<td>FC $\rightarrow$ LW</td>
<td>0.743</td>
<td>1.598</td>
<td>0.150</td>
<td>Rejected</td>
</tr>
<tr>
<td>H3</td>
<td>TC $\rightarrow$ LW</td>
<td>1.011</td>
<td>3.484</td>
<td>0.003</td>
<td>Accepted</td>
</tr>
<tr>
<td>H4</td>
<td>CC $\rightarrow$ LW</td>
<td>0.511</td>
<td>0.499</td>
<td>0.624</td>
<td>Rejected</td>
</tr>
<tr>
<td>H5</td>
<td>HCC $\rightarrow$ LW</td>
<td>0.233</td>
<td>0.620</td>
<td>0.544</td>
<td>Rejected</td>
</tr>
<tr>
<td>H6</td>
<td>EC $\rightarrow$ LW</td>
<td>0.921</td>
<td>1.027</td>
<td>0.319</td>
<td>Rejected</td>
</tr>
<tr>
<td>H7</td>
<td>HS $\rightarrow$ LW</td>
<td>48.059</td>
<td>0.874</td>
<td>0.394</td>
<td>Rejected</td>
</tr>
<tr>
<td>H8</td>
<td>FW $\rightarrow$ LW</td>
<td>-642.649</td>
<td>-3.612</td>
<td>0.002</td>
<td>Accepted</td>
</tr>
<tr>
<td>H9</td>
<td>S $\rightarrow$ LW</td>
<td>1.416</td>
<td>2.993</td>
<td>0.008</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
Based on the pilot test result, housing cost has a statistically significant impact on the living wage. The result is consistent with the previous research by Living Wage Foundation & ACCA (2017) and Bourne (2018) whereby housing cost is anticipated to be especially significant for living wage for the urban households. Next, the result also found a significant relationship between transportation cost and living wage. As Malaysia evolves toward becoming a developing country, transportation demand has increased, particularly in urban areas, as more people migrate to urban areas in search of better opportunities (Inchiem et al., 2020). The result also in line with Rashid et al., (2018) whereby transportation is among the three highest expenditure items across all income group.

Apart from that, the number of full-time workers also affect the living wage. Based on the first objective result, the living wage needed for the 3FW household is lesser than the living wage needed for the 2FW household. This result can be supported by Anker and Anker (2017) who stated that the greater the number of full-time workers in the household, the smaller the living wage required. Savings also found to have a statistically significant impact on the living wage. Despite the importance of saving, Malaysian households, especially those with lower incomes, do not have sufficient financial savings (The World Bank, 2019).

5.0 Conclusion

This study does not define the overall living wage in whole Sabah. This research take place solely in the Kota Kinabalu area, which only includes the city centre, Sepanggar, Menggatal, Likas, Inanam, Luyang, Kepayan, and Tanjung Aru.

Thus, it is hoped that this study would aid society in developing a better understanding on the effects of urbanization and raising awareness of the urban poor in Kota Kinabalu. Aside from that, this study is also relevant in raising awareness about the concept of a living wage.

Furthermore, the findings of this study can aid urban policymakers or planners in developing programmes or reviewing policies that will help Kota Kinabalu to overcome urban poverty concerns and improve the quality of life in Sabah. This research can also help authorities to come up with financial schemes or poverty-eradication initiatives that will ease the burden on those living in cities.
References


INCOME INEQUALITY IN SABAH, MALAYSIA

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ABSTRACT

The main objective of this paper is to discuss the rationale behind changes in income distribution and reason for the changes in Malaysia and specifically in Sabah over the previous decades. This study is using Mean Gross Household Income and Gini coefficient by administrative district in Sabah in order to study and examine the income inequality. Population, rural urban income distribution and ethnic income distribution are all policies that might explain the shifts in income distribution. The main factor that influencing the income inequality is Sabah is the internal migration, impact of development in rural and urban area and education and employment. To explain the widening of income disparity, several ideas have been proposed such as enhancement of policy, education, and infrastructure in Sabah.

Keywords: Income, Gini, Coefficient, Inequality, Development, Sabah.

1. Introduction

Malaysia pursued the policy of Tenth Malaysia Plan, 2011-2015: Progress and Eleventh Malaysia Plan, 2016-2020: Way Forward in order to cope with the income disparities (Economic Planning Unit, 2016). Malaysia income is divided into 3 major household good which is top 20% (T20) where the median income RM 13,148, middle 40% (M40) with median income RM6,275 and below 40% (B40) with median income of RM3,000 (MALAYSIA, 2017).

In this paper, the focus is on Sabah where one of the Malaysian states situated on the northeast corner of Borneo (Teh et al., 2011; Murphy et al., 2020; Fornace et al., 2016). The resource-rich state of Sabah remains one of Malaysia’s most undeveloped states and the highest poverty rates in Malaysia. In comparison to other Malaysian states, Sabah has a low urban population share compared to Kuala Lumpur and Putrajaya.

Despite the fact that middle-income families earn only little more than in previous decades, they have been persuaded to purchase more expensive homes as well as cars and appliances. Paying for these things deprives these middle-class families of other forms of spending, putting them in debt (Grusky & England, 2013; Berg, 2010). As a result, Sabah has long been concerned about income inequality (Asadullah, & Joseph, 2018). Given the foregoing scenario, the goal of this study is to examine the reasoning for changes in income distribution and the reasons for changes in Malaysia, especially in Sabah, during the preceding decades. The next chapter will be assisted with overview of the changes in income inequality and main factors in influencing income inequality. Proceed with chapter 3 the discussion and forwarded with recommendation in chapter 4 and lastly the conclusion for the Chapter 5.

2. Literature Review

2.1 Overview of the changes in income inequality

The review of the Sabah districts is analyzed meanwhile the overall of the Malaysian income distribution will also investigate from overall, strata as well as ethnic dimensions. The Table 1 as shown
in Appendix 1 described about the overview of mean monthly gross household income and Gini coefficient by state in Malaysia. As refer to Table 1, Sabah has recorded the third highest of Gini coefficient with 0.427 in 2012 and reach the highest income inequality in Malaysia with the Gini coefficient of 0.402 in 2016 and 0.397 in 2019. From the table, it clearly showed that the income gap in Sabah still high between rich and poor across population although the mean gross household income has risen since 2012 (Islam et al., 2017; Economic Planning Unit, 2020; Asadullah & Joseph, 2018).

Next, as look in Sabah district, which is illustrated in Table 2 as in Appendix 2 shows the mean monthly gross household income by district and their respective Gini coefficients as well as income shares for selected years between 2016 and 2019. As general, Semporna recorded the highest income inequality in 2019 with the Gini coefficient of 0.474 from 0.420, followed by other districts with higher Gini index like Kota Belud, Kudat, Kota Marudu, Pitas, Tongod, and Telupid. However, there was no information for Telupid in 2016. This situation indicated that these districts have relatively big income gap between rich and poor. From here, as related to the GDP and Gini index, it can be concluded that if Sabah GDP grew based on previous year and Gini index also increased as well as mean income, so it suggested that most of the people may not be experiencing the rising of income. Therefore, although the mean monthly gross household income has risen but the gap between rich and poor become bigger (OECD; Goodman, 2021; Keeley, 2015). Besides that, from strata perspective, the Gini index for urban area has decreased from 0.392 to 0.382 meanwhile the mean income rose to RM6585. While rural area has experienced a rising of Gini index from 0.383 to 0.386 and mean income to RM4341 in 2019. This indicated that the income gap has risen in rural area as compared to urban.

Moreover, to further analyze the income distribution which is based on the distribution of household income by household group in Sabah as shown in Table 3, Appendix 3. The total of Sabah population has risen from 493.1 thousand to 513.2 thousand of households. However, urban area (321.1 thousand) recorded more household than rural (192.1 thousand) in 2019. As referring to the T20 or high-income group, most of the rich household were from urban area as compared to rural area. But B40 or low-income group suggested that the percentage of household in rural area has increased from 48.1% to 51.8% while the percentage of household of B40 in urban declined to 48.2% from 51.9% in 2019. This means among B40 population, most of the low-income household from rural area in Sabah, only 19.9% considered as high-income group in Sabah (Department of Statistic Malaysia, 2020).

Last but not least, this paper will also be reviewed the gross income and disposal income of household by ethnic in Sabah. The changes in income distribution for the two ethnic groups in Sabah as shown in Table 4, Appendix 4. The two ethnic groups referred to Bumiputera and non-Bumiputera while Chinese and Indians considered as non-Bumiputera (Vanar, 2015). However, in peninsular Malaysia there were three main ethnic group such as Malays or Bumiputera, Chinese and Indians. Based on the table, the compounded annual growth rate from 2016 to 2019 for both Bumiputera and non-Bumiputera risen. But we could clearly see that the growth for Bumiputera less than non-Bumiputera.

### 2.2 Main factors influencing income inequality

In this section, we explored three factors in Sabah such as internal migration, impact of development in rural-urban, education and employment. These factors can be considered as the important key to describe the income inequality in Sabah. Thus, the simple conceptual technique used to find the causal relationship between those factors and the income inequality in Sabah.

#### Internal migration

Internal migration or interregional migration in Sabah district was a main issue which also considered as current issue nowadays faced by Malaysian government or local authorities. According to the Migration Survey Report in 2018, Sabah was recording the highest movement from rural to urban areas (Department of Statistic Malaysia, 2019). The movement were due to the attraction of better economic opportunities and willingness to improve standard of living (Yang et al., 2017). Tey (2014) and Alarima (2018) added that young people were more likely to move to urban compared to the old, while the migration rate of Bumiputera was much higher than non-Bumiputera as they already settled in the urban areas since the 1980s. Other than that, the migration could cause by the family matters, environment,
career, marriage, education. Based on Department of Statistics Malaysia (2017), the probability of male to migrate was higher than female due to career purposes while females migrated for marriage or family purpose.

Despite several initiatives to achieve more balanced regional growth and development, income disparity remains broad in Malaysia’s states. The study from Tey et al. (2019) revealed that variation of state-level in ethnic and distribution of the population in urban-rural, education, migration pattern and the structure of employment are directly related to income per capita. In Sabah case, the number of households in urban recorded 312.9 thousand while 180.2 thousand of household live in rural as referring to the Household Income and Basic Amenities Survey Report 2019. Thus, urban living is much more efficient such as accessibility of health care, education, job opportunity, living standard and infrastructure (Aikaeli et al., 2021). However, it created overcrowded in the cities, higher income disparity, poverty, high living cost, inadequate resources, crime, and pollution (Tacoli et al., 2015).

**Impact of development in rural-urban**

Development was a crucial thing to boost economic activities and stimulate growth. Normally urban provide important key to local or country’s economy contribution. However, some problem from the development between rural and urban areas arise when there was an imbalance of development. Firstly, the increased in the level of urban development might absorb money needed for rural and underdeveloped areas. Thus, sustaining structural inequality and imbalanced rural-urban interactions and prolonging regional and rural-urban inequalities. In fact, Sabah government were more focusing on the development in Kota Kinabalu such as better infrastructure, education, information and communication technologies and health care comparing to rural areas.

Since the issue of income disparity and poverty in Sabah rural, it was critical that rural based poverty reduction and improvement of income programs to implement. Based on the Long-Term Strategic Action Plan 2035, Sabah LEAP which presented by Economic Planning Unit of Sabah (UPEN, 2018), one of the main objectives were move towards upper middle income and subsequently to high income status and reduce rural-urban socio-economic inequality which considered as the development challenges. In this plan, Sabah government promote 6S to move the state towards smart green state which are Smart cities, Smart agriculture, Smart rural services, Smart security, Smart environment, and Smart nature conservation aimed to achieve zero poverty in year 2035. Therefore, the concentration in the development on rural area as well as urban will reduce the socioeconomic inequality and absolute poverty as well as relative poverty, boost economic productivity and growth in future.

**Education and employment**

In addition, education and employment considered as one of the factors influencing the income inequality in Sabah. Other than that, they also having close relationship between each other. A key component to ensure that a business prosper in a changing market environment was the investment on human capital. The current trend also suggests that the effectiveness of paying attention to the return on investment in human resources will be an important prerequisite for the company's growth and market competitiveness in the future (Drabek et al., 2017; Kowalewski, 2016; Burkovska & Romanchyk, 2016). Pelinescu (2015) suggested that education and training can impact positively on the employment as well as economic growth. This indicated that better education level and skills provide better knowledge and technological diffusion (Banerjee, 2012), meanwhile reduce unemployment rate and poverty as well as avoid earning low income.

For instance, In Sabah case, education disparity in rural areas is considerably greater than urban areas, the education gap such as result achievement still rising although both areas have decreased in terms of education inequalities. Thus, improving the quality of the education is the priority, especially in rural areas to address this issue (Tan et al., 2016; Agrawal, 2014). In short, the accessibility of education in rural still high as the education inequalities of urban-rural dropped but provide a better infrastructure facility, better environment of study and quality of education in rural is needed to further minimize the gap of achievement between both areas. Therefore, when they were highly educated, the knowledge
gain could contribute to their hometown and increase rural development thereby rises income of the region and decrease the income inequality (Nguyen, 2021; Castello-Climent & Domenech, 2021).

3. Discussion

Sabah has a population of 3.91 million people, with 2.04 million men and 1.87 million women, with a population density of 53 people per square kilometer. (Malaysia, Poket Stats Negeri Sabah ST4 2020, 2021) This study aimed to describe spatial large gap between the rich and poor in Sabah. The top 3 export product palm oil RM12632 mill (52.5%), crude petroleum RM4303 Million (17.9%) palm kernel oil RM1183 mil (4.9%) Sabah top 3 import product Ship Boats & Floating Structure RM10110mill (59.9%) Refined Petroleum product RM628 mill (3.7%) Fertilizer and Manufactured RM582mil (3.4%) (Malaysia, Malaysia External Trade Statistics By State 2021, 2021) shown that Sabah is highly dependable with agriculture industry where mostly palm plantation is located in rural areas which largely poor, with no access to clean water, electricity and roads. (Welsh, Somiah, & Loh, 2021). With the highest import of knowing the macroeconomic contribution of the fishery sector is essential in Sabah. Income and wealth are concentrated around Kota Kinabalu Industrial Park (KKIP) area, Kota Kinabalu, Sabah, Malaysia (Tating, Hack, & Jetten, 2013), Sandakan and Tawau, largely through investment and tourism.

Moreover, main external and current factor to income inequality is the current outbreak of COVID-19. (Wildman, 2021) The first confirmd cases in Malaysia is on 4th February 2020 (Elengoe, 2020;) and the implement of Movement Control Order despite has decreased the economic activity in Sabah. Small Enterprise such as food vendor and cloth vendor are force to shut down due to unable to cope with smaller income with respect with high expenses. (Shafi, Ren, & Liu, 2020). However, starting March 4, 2021, about 42,117 frontline workers, including Chief Minister Datuk Seri Hajiji Noor, would be among the first to get vaccinate Government effort to disturbed vaccination to the people in order to achieve Herd Immunity (D’Souza & Dowdy, 2021) and towards immunization (S, et al., 2012) improve the economy stability and also the income inequality amongst the Sabahan people.

4. Recommendation

The following policy recommendations are made based on the aforesaid analysis. Nowadays, enhanced taxes policy since taxes have become less progressive, government should increase the taxpayer knowledge (Pratama, 2018) in order to avoid for the M40 and B40 to pay for unequal taxes and unequal benefit it is suggested to study the disparity of income taxes between the poor and wealth.

Moreover, in order to boost production and revenue to achieve income equality, government should increase and encourage modern technology and in rural area especially for farmers, fisher, and small holders. Government can supply more farmer’s machinery and outboard motor for fisher to double the production. Meanwhile, modern techniques such as fertigation, hydroponics, and vertical farming will be employed to repurpose abandoned buildings and empty spaces in metropolitan areas for urban farming can also help the B40 household in urban area to enhance their extra income.

Lastly, it is significant that higher education is lead to higher paid income. The government should concentrate on narrowing urban–rural education system to ensure everyone have the equal benefit in study. Recently, in order to cope with home-based teaching and learning process Sabah Government supply 10 thousand unit of laptop to student in need (Jonathan N., 2021) However insufficient and slow internet network become issue to the teacher and student in rural area. Government should alert the significance of need in the community. Last year, federal government provided budget allocation of RM 5.2 billion for school renovation and school insufficient (JIFFAR, 2019). This is one way to increase the comfort-ness of the student to study in schools. Students in rural and isolated regions will continue to get appropriate facilities such as hostels, transportation, and financial help in order to complete their basic and secondary education. In significant with that, government can provide students from B40 households with easier access to high-quality education and skill training. (Bernama,2015). Through preferential entrance qualifying requirements and enrolment quotas, institutions of higher
learning and skills training institutes would be incentivized to provide additional seats for these students.

5. Conclusion

Malaysia's administration has set out to restructure the country's economy and improve its competitiveness since income inequality bring major impact towards Sabah. In order to lessen the impact of the crisis on the poor and low-income groups, the governmentreallocates funds to support social sectors and established targeted programs with three goals in mind: reducing poverty, making adjustment programs more politically acceptable, and implementing institutional reforms. (Lin, Edvinsson, Chen, & Beding, 2014). Inequality is a difficult problem to solve, and regulating it is hard and impossible to solve. (Berger, Grusky, Raffel, Samuels, & Wimer, 2010) In conclusion, by focus on the main reason the changes of income inequality core issue and make and improvement for the income inequality in Sabah, over the time it will be solved.

Acknowledgement

First and foremost, we would like to thank my subject supervisors, Dr. Khairul Hanim Pazim and Dr. Borhan Sareya for their guidance, tolerance, and patience throughout our conceptual paper. We could not complete this task without their supports. Furthermore, we would like to express our sincere gratitude to the Faculty of Business, Economics and Accountancy (FBEA) Universiti Malaysia Sabah (UMS) for giving us this opportunity to learn both academic and practical skills to complete this paper. Last but not least, we would like to thank each other for this collaboration.

References


## Appendix 1

Table 1: Mean monthly gross household income (RM) and Gini coefficient by state in Malaysia from 2012 to 2019.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Johor</td>
<td>4,658</td>
<td>0.383</td>
<td>6,207</td>
<td>0.324</td>
<td>6,928</td>
<td>0.354</td>
<td>8,013</td>
<td>0.366</td>
</tr>
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<td>Kedah</td>
<td>3,425</td>
<td>0.391</td>
<td>4,478</td>
<td>0.365</td>
<td>4,971</td>
<td>0.393</td>
<td>5,522</td>
<td>0.354</td>
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<td>Kelantan</td>
<td>3,168</td>
<td>0.410</td>
<td>3,715</td>
<td>0.393</td>
<td>4,214</td>
<td>0.389</td>
<td>4,874</td>
<td>0.379</td>
</tr>
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<td>Melaka</td>
<td>4,759</td>
<td>0.355</td>
<td>6,046</td>
<td>0.316</td>
<td>6,849</td>
<td>0.377</td>
<td>7,741</td>
<td>0.383</td>
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<td>Negeri Sembilan</td>
<td>4,576</td>
<td>0.382</td>
<td>5,271</td>
<td>0.361</td>
<td>5,887</td>
<td>0.380</td>
<td>6,707</td>
<td>0.391</td>
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<td>0.354</td>
<td>4,343</td>
<td>0.360</td>
<td>5,012</td>
<td>0.324</td>
<td>5,667</td>
<td>0.330</td>
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<td>Pulau Pinang</td>
<td>5,055</td>
<td>0.370</td>
<td>5,993</td>
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<td>6,771</td>
<td>0.356</td>
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<td>0.359</td>
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<td>Perak</td>
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<td>0.417</td>
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<td>5,065</td>
<td>0.362</td>
<td>5,645</td>
<td>0.377</td>
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<td>Perlis</td>
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<td>0.455</td>
<td>4,445</td>
<td>0.346</td>
<td>4,998</td>
<td>0.327</td>
<td>5,476</td>
<td>0.334</td>
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<td>Selangor</td>
<td>7,023</td>
<td>0.396</td>
<td>8,252</td>
<td>0.379</td>
<td>9,463</td>
<td>0.372</td>
<td>10,827</td>
<td>0.393</td>
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<tr>
<td>Terengganu</td>
<td>3,967</td>
<td>0.426</td>
<td>5,816</td>
<td>0.360</td>
<td>5,776</td>
<td>0.328</td>
<td>6,815</td>
<td>0.335</td>
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<tr>
<td>Sabah</td>
<td><strong>4,103</strong></td>
<td><strong>0.427</strong></td>
<td><strong>4,879</strong></td>
<td><strong>0.397</strong></td>
<td><strong>5,354</strong></td>
<td><strong>0.402</strong></td>
<td><strong>5,745</strong></td>
<td><strong>0.397</strong></td>
</tr>
<tr>
<td>Sarawak</td>
<td>4,293</td>
<td>0.440</td>
<td>4,934</td>
<td>0.391</td>
<td>5,387</td>
<td>0.386</td>
<td>5,959</td>
<td>0.387</td>
</tr>
<tr>
<td>W.P. Kuala Lumpur</td>
<td>8,586</td>
<td>0.442</td>
<td>10,629</td>
<td>0.407</td>
<td>11,692</td>
<td>0.378</td>
<td>13,257</td>
<td>0.350</td>
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<td>W.P. Labuan</td>
<td>6,317</td>
<td>0.383</td>
<td>7,591</td>
<td>0.385</td>
<td>8,174</td>
<td>0.398</td>
<td>8,319</td>
<td>0.333</td>
</tr>
<tr>
<td>W.P. Putrajaya</td>
<td>8,101</td>
<td>0.305</td>
<td>10,401</td>
<td>0.374</td>
<td>11,555</td>
<td>0.369</td>
<td>12,840</td>
<td>0.361</td>
</tr>
</tbody>
</table>

Source: Department of Statistic Malaysia, 2020.

## Appendix 2
Table 2: Mean monthly gross household income (RM) and GINI Coefficient by administrative district and strata in Sabah between 2016 and 2019.

<table>
<thead>
<tr>
<th>District &amp; Strata</th>
<th>2016</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean income (RM)</td>
<td>Income share (%)</td>
</tr>
<tr>
<td>Urban</td>
<td>6,095</td>
<td>72.2</td>
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<tr>
<td>Rural</td>
<td>4,068</td>
<td>27.8</td>
</tr>
<tr>
<td>Tawau</td>
<td>5,254</td>
<td>11.5</td>
</tr>
<tr>
<td>Lahad Datu</td>
<td>5,048</td>
<td>5.7</td>
</tr>
<tr>
<td>Semporna</td>
<td>5,207</td>
<td>3.4</td>
</tr>
<tr>
<td>Sandakan</td>
<td>5,223</td>
<td>12.0</td>
</tr>
<tr>
<td>Kinabatangan</td>
<td>4,879</td>
<td>2.9</td>
</tr>
<tr>
<td>Beluran</td>
<td>3,992</td>
<td>1.9</td>
</tr>
<tr>
<td>Kota Kinabalu</td>
<td>7,043</td>
<td>22.4</td>
</tr>
<tr>
<td>Ranau</td>
<td>4,462</td>
<td>1.9</td>
</tr>
<tr>
<td>Kota Belud</td>
<td>4,130</td>
<td>2.0</td>
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<tr>
<td>Tuaran</td>
<td>4,698</td>
<td>3.9</td>
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<tr>
<td>Penampang</td>
<td>6,207</td>
<td>8.0</td>
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<td>Papar</td>
<td>5,469</td>
<td>4.6</td>
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<tr>
<td>Kudat</td>
<td>3,824</td>
<td>1.9</td>
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<td>Kota Marudu</td>
<td>3,367</td>
<td>1.3</td>
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<tr>
<td>Pitas</td>
<td>3,076</td>
<td>0.6</td>
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<td>Beaufort</td>
<td>4,621</td>
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<td>Kuala Penyu</td>
<td>4,118</td>
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<td>Sipitang</td>
<td>5,270</td>
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</tr>
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<td>Tenom</td>
<td>4,495</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Income share (%)</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>------------------</td>
</tr>
<tr>
<td>Top 20%</td>
<td>12,429</td>
<td>46.4</td>
</tr>
<tr>
<td>Middle 40%</td>
<td>5,037</td>
<td>37.6</td>
</tr>
<tr>
<td>Bottom 40%</td>
<td>2,135</td>
<td>16.0</td>
</tr>
<tr>
<td>Total household ‘000</td>
<td>493.1</td>
<td></td>
</tr>
</tbody>
</table>

Source: Department of Statistic Malaysia, 2020.

### Appendix 4

#### Table 4: Household gross income and disposal income by ethnic in Sabah between 2016 and 2019

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (G)</td>
<td>Mean (D)</td>
<td>Mean (G)</td>
<td>Mean (D)</td>
</tr>
<tr>
<td>Bumiputera</td>
<td>4,990</td>
<td>4,461</td>
<td>5,254</td>
<td>4,704</td>
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<tr>
<td>Non Bumiputera</td>
<td>6,298</td>
<td>5,522</td>
<td>7,426</td>
<td>6,475</td>
</tr>
</tbody>
</table>

Source: Department of Statistic Malaysia, 2020.
IMPACT OF FOREIGN DIRECT INVESTMENT ON CO2 EMISSION AT DIFFERENT LEVEL OF ECONOMIC DEVELOPMENT: EVIDENCE FROM LEAST SQUARE DUMMY VARIABLE CORRECTED

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ABSTRACT

Despite a number of positive economic impacts, foreign direct investment (FDI) is said to have an adverse impact on CO2 emission. FDI causes air pollution through the import of polluting technologies. However, studies on the relationship between FDI and CO2 emission yield mix results. The inconclusive findings suggest that the relationship could be influenced by other factor. This study aims to investigate the impact of foreign direct investment on the emissions of carbon dioxide (CO2) at different levels of economic development. Using the bias corrected least square dummy variable corrected (LSDVC) in a sample of 123 countries, this study finds that FDI has asymmetry impact on CO2 emissions. FDI reduces CO2 emissions in high and upper middle-income countries but increases the emissions in the low-income countries. The results suggest that the inflow of FDI into high and upper middle countries attracts cleaner technologies, while the inflow into low-income countries may serves as the destination for dirty FDI.

Keywords: Foreign direct investment, CO2 emission, economic development

1 Introduction

Emission of carbon dioxide (CO2) has been one of the most debated topics since a few past decades (Sabir, Qayyum & Majeed, 2020) due to its ability to adversely affect the environment and causes the deterioration of health. A report on sustainable development goals by the United Nation in 2018 reveals that nine out of ten persons living in urban areas inhale polluted air. The pollution may cause loss of productivity. For example, in 2015, the environmental pollution in Chinese has caused 60,000 annual premature mortality, reduction in the annual growth rate of about 13 percent for forest biomass, 6 percent for wheat, 8 percent for rice, and 7 percent of GDP. The financial costs for these translate to about $52 billion, $8 billion, $11 billion, and $610 billion for annual losses in forest biomass, wheat, rice, and respiratory diseases respectively (Feng et al., 2019).

Activities related to production is said to have a significant role in CO2 emission (Al-mulali and Che Sab, 2012; Jalil and Mahmud, 2009). In order to sustain positive economic growth, countries need to consistently increase their production. They require some amount of funds to finance the productive activities. However, for most developing countries, the amount of available domestic fund
is limited. Relying solely on the domestic fund could not enhance the economic activities at a desired pace. Therefore, those countries have to obtain it elsewhere. One source of funds that is effective and efficient in funding economics activities is foreign direct investment (FDI). Azman-Saini et. al. (2010) and Demena & van Bergeijk (2019) mention that FDI is crucial in promoting economic growth, a potential source of employment, a channel for advance d technologies transfer and other economic benefits. Those benefits have made FDI as target by many countries. The amount of FDI inflow has been in increasing trend since many decades. In 2003, the amount of global FDI inflow was recorded at about 550 billion dollars. The amount increased by more than 260 percent to about 2 trillion dollars in 2015 (UNCTAD, 2019). That shows the importance of FDI to the global economics.

Though many studies suggest that FDI is crucial to economic development, Feng et al., (2019) mention that FDI could also bring an adverse impact to the environment. According to Pollution Haven Hypothesis, heavy industries and firms relocate their production to countries with no or less strict environmental laws to avoid compliance. Thus, the inflow of FDI into this category of countries could contribute to environmental degradation such as high CO2 emission. However, other hypothesis has different views on the environmental impact of FDI. The Pollution Halo Hypothesis stress that the inflow of FDI could also transfer the clean technology into the host countries. Porter (1991) and later works by Porter and Vander Linde (1995) and Esty and Porter (1998) mention that FDI will promote environmental sustainability in countries with strict environmental laws and compliance. FDI from advanced countries will transfer their advanced technologies that are more environmental friendly to the less developed countries.

Many studies have been carried out to investigate the environmental impact of FDI on CO2 emission. However, the results are inconclusive. Hakimi and Hamdi (2016), Demena and Afesorgbor, (2020) and Seker et. al. (2015) find that FDI increases CO2 emission and environmental degradation. They use low income and developing economies as samples. Similar findings are reported earlier by Essandoh, Islam, and Kakinaka, (2020), Jun et al. (2018), and To et al. (2019), Sarkodie and Strezov (2019), Zhang (2008), Beck and Koo (2009) and Lee (2010) who argue that some FDI are dirty and its inflow to other countries is to avoid compliance of their countries’ rigid laws. On the other hand, Abdouli and Hammami (2017) and Shabazz et. al. (2015) mention that FDI could promote environmental stability through technological transfer and diffusion. The inconclusive results of FDI and CO2 emission could be due that the relationship of FDI-environmental stability could be moderated by other economic variable such as level of economic development. Further examination reveals that some studies (Hakimi and Hamdi, 2016; Kiviiro and Arminen, 2014 Essandoh, Islam, and Kakinaka, (2020),) that support pollution haven hypothesis have sample drawn from low income and developing countries while studies in support of pollution halo hypothesis are usually based on developed or middle income countries (Essandoh, Islam, and Kakinaka, (2020), Sarkodie and Strezov, 2019), Abdouli and Hammami, 2017; Shabazz et al, 2015, Salahuddin et al; 2018). Different countries with different economic development may have different priorities in choosing between economic growth and environmental. The priority for most of the low income and developing economies is economic growth and less emphasis on environmental impact. In contrast, most developed countries attached significant importance to environmental sustainability just as economic growth. This may imply that FDI to low-income countries may not be environmentally friendly while in the case for developed countries, there is strict environmental regulations to comply. Thus, the impact of FDI on CO2 emissions may actually be influenced by countries’ income level.

One of motivation for this study stems from the inconclusiveness of FDI-C02 emissions nexus amongst scholars. There is apparent lack of theoretical and empirical consensus on the impact of FDI on environmental quality. Pollution Halo suggests negative effect of FDI on carbon emissions while pollution Haven argues that FDI increases pollution and degrades the environment. On the empirical front, scholars are divided as to the impact of foreign direct investment on C02 emissions. This calls for further investigation as to the relationship between FDI and C02 emissions. Another limitation of past studies relates to the choice of an estimator which yields asymptotically accurate and consistent parameter estimates. Previous studies adopt dynamic panel estimators which may be expose to the problem of Nickell Bias, and therefore, the parameter estimates of these studies may be bias. This study
corrects for this problem by adopting a dynamic panel estimator which produces accurate and consistent parameter estimates relative to other dynamic panel estimators.

This study aims to examine the role of economic development in the relationship between FDI and CO2 emission. Adopting the bias corrected least square dummy variable (LSDVC) suggested by Bruno (2005), on a sample of 123 countries from the period of 1995-2014, the results show that FDI has negative impact on CO2 emissions, hence improving environmental quality. However, further examinations show that the impact of FDI on the environment depends on the level of income. In low-income countries, the presence of FDI could increase CO2 emissions which supports pollution haven hypothesis. Whilst in high income countries, FDI has negative impact on CO2 emissions which supports pollution halo hypothesis. However, for middle-income countries, FDI has no significant impact to CO2 emission.

The significance of this study may not be overemphasized. First, the study provides new perspective with respect to the relationship FDI and quality environment. The study shows that the priorities of countries relative to environmental problems may be define by their income level and therefore determines the kind/nature of FDI to countries. Second, the study may be important to policy makers. The global effort to curb the emissions of carbon may require concerted effort by all countries. The results of the research provides vital information to stake holders where attention and countries to focus attention with respect to FDI flows. Third, the study adopts methodology which yields accurate and consistent parameter estimates relative to most dynamic panel estimators. This may add credence to the findings of the study.

Previous paragraph mentioned a number of studies that has been done in examining the relationship between FDI and CO2 emissions. However, to the best of our knowledge, no study has investigated the effect of FDI on CO2 emission at different level of economic development. This study adopts LSDVC method which could correct the problems of endogeneity, heterogeneity, consistency of parameter estimates amongst others that faced by most dynamic panel studies. The method has been argued to yield the least standard error and consistent estimates relative to all other asymptotically dynamic panel models. Furthermore, the results provide information that global effort to combat climate change must go hand-in-hand with economic development in low-income countries and to ensure FDI to these countries are consistent with environmental laws in countries of origin.

The rest of the paper is organized as follow; Section 2 is the literature review. Section 3 discusses the methodology used in this study. Section 4 discusses and analyzes our findings. Section 5 concludes.

2 Literature Review
According to the technological gap theory, the impact of FDI on environment depends on technological gap and the level of compliance to environmental laws and regulations among countries. Based on the following premises, Porter (1991) and later works by Porter and Vander Linde (1995) and Esty and Porter (1998) hypothesized that FDI will promote environmental sustainability in countries with strict environmental laws and compliance, especially if the benefits of compliance out-weights the cost to innovate/invent environmentally friendly technologies. In this case, FDI brings about technological transfer and hence attracts green foreign investment. This is termed Pollution Halo hypothesis. It states that FDI improves environmental quality through transfer of environmentally friendly processes. Palmer (1995) however critique Porter’s hypothesis and argue that the impact of FDI on environment depends on the decision to innovate new technologies based on their cost-benefit analysis. He contends that FDI may generate positive externalities if the benefits or incentive to innovate environmentally friendly processes out-weights the cost and therefore supports Porter’s hypothesis. However, he also argued that FDI may generate negative externalities if the cost of innovation is greater than its benefits. This may lead to Pollution Haven, where pollution heavy industries/firms relocate to countries with no environmental laws and/or institutions to avoid compliance. Therefore, Pollution Haven hypothesis argues that FDI may in fact contributes to environmental degradation.
There are a number of studies on FDI and environmental sustainability. However, there is lack of consensus as to the precise impact of FDI on the environment. For instance, Yu and Xu (2019), Xie, Wang, and Cong (2019), (Latorre et al., 2018), (Hashmi and Alam, 2019; Zhang et al., 2020), Hille et al. (2019), Abdouli and Hammami (2017), Shahbaz et al., (2015) and Al-Mulali and Tan (2013) report that FDI promotes environmental sustainability through technological transfer and diffusion. It is argued that FDI embodies better technologies which are friendly to the environment and hence are transferred to the host countries. On the contrary, Xie, Wang, and Cong (2019), Sapkota and Bastola (2017), Zhou et al. (2018), Shahbaz et al.’s (2018), Zhang (2008), Beck and Koo (2009), Lee (2010), and Acharyya (2009) report that FDI has adverse impact on the environment and leads to increase CO2 emissions. It may be argued that some FDI are dirty and are relocating to developing countries to avoid compliance to the rigid laws in their countries. They migrate to countries with weak institutions to ensure compliance or absence of environmental laws altogether. This may lead to environmental degradation. Mahmood, Alkhateeb, and Furqan (2020), Yin, Xiong, and Hussain (2021), Shahbaz et al., (2015) reports that the relationship between FDI and environmental quality is non-linear and confirms Kuznet hypothesis between FDI and environment. It may be argued that FDI generates negative externalities on the environment at the initial stage but tends to promote environmental sustainability after reaching certain threshold. Shaari et al., (2014), Hoffman et al., (2005) and Kim and Beak (2012) argued that FDI has marginal or no impact on the environment.

Other literatures have examined the link between environment and host of other factors. For instance, Kim et al., (2018), Salahuddin, Alam, and Ozturk (2016), Rafindadi (2016), and Shahbaz et al., (2013) examined the relationship between trade openness and environmental sustainability and report that trade promotes environmental sustainability. Trade openness promotes specialization and hence reduce CO2 emissions, and consequently improve environmental quality. On the contrary, Kim et al., (2018), Balsalobre-Lorente et al. (2018), Hakimi and Hamdi (2016), Ali, Abdullah, and Azam (2017), and Shahbaz, Tiwari, and Nasir (2013) report that trade openness has negative impact on the environment. This may be due to the fact trade openness encourages over production beyond domestic needs and export to other countries. There is correlation between economic growth and environmental quality. This explains for the negative effect of trade openness on the environment. Mamun et al., (2014), Nasreen, Anwar, and Ozturk (2017), Ali, Abdullah, and Azam (2017) investigated the nexus between energy consumption and environmental quality and report positive association between energy consumption and environment while Bento and Moutinho (2016), Azam et al., (2015) report that energy consumption reduces CO2 emissions. Other scholars such as Salahuddin, Gow, and Ozturk (2015), Salahuddin, Alam, and Ozturk (2016), and Jalil and Feridun (2011) examined the relationship between financial development and environment sustainability and find that financial development has negative impact on CO2 emissions. On the contrary, Javid and Sharif (2015), Sadorsky (2010), and Zhang (2011) find positive impact of financial development on the environment.


3 Methodology
Following the work of Hakimi and Hamdi (2016), we specify the functional relationship between FDI and environment quality as below;

\[ CO2 = f(fdi, Xs) \]

where \( CO2 \) denote carbon dioxide emissions in metric tons (used as proxy for environmental quality), \( fdi \) represent FDI and is proxies by two measures; that is gross FDI inflow and the ratio of FDI inflow to GDP. \( Xs \) is the vector of control variables. Transforming this into dynamic panel log linear econometric specification, we have

\[ lCO2_{it} = \beta_0 + \beta_1 lCO2_{it-1} + \beta_2 ly_{it} + \beta_3 lf_{di_{it}} + \beta_4 le_{c_{it}} + \varepsilon_{it} \]
where $lCO_2$, $l_y$, $lfdi$, and $lec$ denote logarithms of carbon dioxide, economic growth, FDI, energy consumption respectively. To estimate how the impact of FDI on the environment may vary across our sample, we generate dummies for low income, lower middle income, upper middle income and high income countries and interact them with FDI. The model is re-estimated as thus below

$$lCO_2_{it} = \beta_0 + \beta_1 lCO_2_{it-1} + \beta_2 l_y_{it} + lFDI_{it} + \beta_3 d1 lFDI_{it} + \beta_4 d2 lFDI_{it} + \beta_5 d3 lFDI_{it} + \beta_6 d4 lFDI_{it} + \beta_7 lec_{it} + \epsilon_{it}$$

where $d1, d2, d3, and d4$ represent dummies for low income, lower middle income, upper middle income and high income countries respectively, based on World Bank classification.

To estimate our models, we employ the Bias Corrected Least Square Dummy Variable (LSDVC) method as proposed by Kiviet (1995) and extended by Judson and Owen (1999), Kiviet (1999) Bun and Kiviet (2003) and Bruno (2005). The motivation for the choice of this estimator owes to its strength in addressing the problems of dynamic panel estimation especially in respect of asymptotic efficiency, endogeneity bias estimates associated with finite time observations (Nickel, 1981). Nickel (1981) based on AR(1) model has reported the extent of the degree of negative bias of dynamic panel estimators as thus;

$$plim(p - \rho) = -\frac{(1 - \rho)}{T - 1}$$

In this respect, the LSDVC performs better than most dynamic panel estimators. Dang et al (2015) through Monte Carlo simulations have confirmed the superiority of the LSDVC over other dynamic estimators and argued that the variance of the LSDVC is smaller relative to other mean squared error estimators including the asymptotically efficient GMM estimators. Also, Kiviet (1995), Judson and Owen (1999), and Bun and Kiviet (2003) find that in any finite sample (in terms of $N$ or $T$, or both), the LSDVC gives more accurate estimates. The method uses bootstrapping procedure, which when compared to the standard dynamic panel models based on the asymptotic assumption of first order AR models are found to give more accurate parameter estimates. Kiviet (1995) espouses bias correction to order 1. However, Bun and Kiviet (2002) have extended the bias correction to order 3. In order to make the bias correction feasible, the estimation procedure would have to be initialize by a consistent and efficient dynamic panel estimator since the consistency of the LSDVC depends on unknown population parameters. Therefore, we shall initialize our bias correction model using Anderson and Hsiao (AH), Arellano and Bond (AB) and Blundell and Bond (BB) estimators.

This study uses annual data from 1995-2014 for 123 countries, comprising of 12 low income countries, 31 lower middle income countries, 35 upper middle income countries and 45 high income countries. In the selection of the sample countries, we remove countries with the population less than one million and eliminate countries with incomplete data of the selected variables. In this study, environmental quality is proxied by CO2 emissions (in Metric tons per capita) as used by Shahbaz et al. (2015) and Kivyiro and Arminen (2014). Economic development is represented by real GDP per capita as adopted in studies by Robalino-Lopez et al., (2015) and Nasreen, Anwar, and Ozturk (2017). Electricity consumption represents energy consumption is denoted by electric power consumption per capita as used by Mercan and Karakaya (2015) and Saidi and Hammami (2015). FDI is proxy by two (2) measures. The first is the gross FDI inflow (FDI 1) as used in past studies by Abdouli and Hammami (2017). This proxy is chosen because it has been argued to be directly related to production and therefore carbon emissions. The second is the ratio of FDI inflow to GDP (FDI 2) which has been used in studies by Hakimi and Hamdi (2016). The reason for using this ratio is because it makes allowances for relative size of the economy and therefore provides better insight as to its impact on the economy. Data on real GDP per capita, CO2 emissions, electric consumption are collected from World Development Indicator database. Data on FDI flows is collected from Lane and Milesi-Ferretti (2017).

4 DISCUSSION AND ANALYSIS OF RESULTS

The descriptive statistics as presented in table 1 suggest that there is significant different in CO2 emissions among countries. The mean value of carbon emissions is about 5.21 metric tons while the maximum and minimum emissions by the sample countries are quite far apart, which are 36.09 and 0.02 metric tons respectively. This is similar for other variables in the model. While table 2 of pairwise
correlation show that all the variables are significantly and positively correlated with CO2 emissions. The coefficient of correlation between electricity consumption, real GDP, and CO2 emissions are moderately high (0.757 and 0.611 respectively). FDI 1 and FDI 2 are found to have a weak positive correlation with carbon emissions (0.262 and 0.0508 respectively).

**Table 1: Descriptive Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>co2</td>
<td>2460</td>
<td>5.21</td>
<td>5.78</td>
<td>0.02</td>
<td>36.09</td>
</tr>
<tr>
<td>ec</td>
<td>2460</td>
<td>3,552.55</td>
<td>4,313.92</td>
<td>13.52</td>
<td>25,590.69</td>
</tr>
<tr>
<td>rgdpc</td>
<td>2460</td>
<td>13,327.18</td>
<td>17,244.61</td>
<td>170.58</td>
<td>91,617.28</td>
</tr>
<tr>
<td>fdi1</td>
<td>2459</td>
<td>1.41e+11</td>
<td>4.60e+11</td>
<td>0.00</td>
<td>6.23e+12</td>
</tr>
<tr>
<td>fdi2</td>
<td>2459</td>
<td>0.48</td>
<td>1.32</td>
<td>0.00</td>
<td>27.85</td>
</tr>
</tbody>
</table>

Note: co2 = carbon emissions per metric ton, ec = electricity consumption, rgdpc = real GDP per capita, fdi1 = gross FDI inflow, fdi2 = the ratio of FDI flows to GDP.

**Table 2: Correlation**

<table>
<thead>
<tr>
<th>Variable</th>
<th>co2</th>
<th>ec</th>
<th>rgdpc</th>
<th>fdi1</th>
<th>fdi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>co2</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ec</td>
<td>0.757***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rgdpc</td>
<td>0.611***</td>
<td>0.835***</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fdi1</td>
<td>0.262***</td>
<td>0.310***</td>
<td>0.426***</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>fdi2</td>
<td>0.051**</td>
<td>0.066***</td>
<td>0.135***</td>
<td>0.199***</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Note: co2 = carbon emissions per metric ton, ec = electricity consumption, rgdpc = real GDP per capita, fdi1 = gross FDI inflow, fdi2 = the ratio of FDI flows to GDP. ** and *** denote significance at 5% and 1% respectively.

Table 3 shows the estimation results of the FDI impact on carbon dioxide emissions (CO2) using the bias corrected least square dummy variable method (LSDVC). The estimations are initialized based on the Blundell and Bond system generalized method of moments (GMM) and the Arellano and Bond difference GMM techniques. The results in table 3 show that the estimation using two different proxies of FDI yield different results. The FDI has a negative impact on CO2 emission in the estimation using the ratio of FDI to GDP as a proxy (FDI 2) while the relationship between them is insignificant when the FDI is represented by gross inflow of FDI inflow (FDI 1). It is argued that the ratio of FDI to GDP is a better measure relative to gross FDI inflow because it reflects the importance of FDI relative to the economy and therefore allow for comparison amongst countries (Hakimi and Hamdi, 2016). Further, this measure takes into account both inflow and outflow, which provides better insight.

**Table 3: Results of The Impact of FDI on CO2 Emissions Using LSDVC Initialized Based on The System and Difference GMM**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 Blundell &amp; Bond System GMM</th>
<th>Model 2 Arellano Bond Difference GMM</th>
<th>Model 3 Blundell &amp; Bond System GMM</th>
<th>Model 4 Arellano Bond Difference GMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>l.lco2</td>
<td>0.879*** (0.013)</td>
<td>0.809*** (0.016)</td>
<td>0.879*** (0.012)</td>
<td>0.809*** (0.015)</td>
</tr>
<tr>
<td>lec</td>
<td>0.080*** (0.014)</td>
<td>0.104*** (0.015)</td>
<td>0.078*** (0.015)</td>
<td>0.101*** (0.014)</td>
</tr>
<tr>
<td>l.rgdpc</td>
<td>0.057*** (0.019)</td>
<td>0.055*** (0.019)</td>
<td>0.050*** (0.017)</td>
<td>0.055*** (0.015)</td>
</tr>
</tbody>
</table>
If we focus on the estimation using FDI 2, the negative value of the coefficients of FDI means that the increase of FDI will decrease the emission of CO2. This suggests that the presence of FDI may promotes environmental sustainability in a country. The result is consistent using both the system and the difference GMM approaches, and supports the finding of Shahbaz et al., (2015) and Al-Mulali and Tan (2013). The results of other variables show that electricity consumption and economic growth have positive impact on CO2 emissions, and therefore lead to environmental degradation. These findings are consistent in all models and in line with the work of Nasreen, Anwar, and Ozturk (2017) and Robalino-Lopez et al., (2015).

This study extends the estimation in order to see how different levels of income could influence the relationship of FDI - CO2 emission. This analysis is crucial as there are arguments that different countries may have different ways in managing FDI. High income countries that have better facilities and superior human capital may be able to optimize the benefit of FDI and to minimize its risks. While for low-income countries, the lack of facilities and human capital could expose their society or environment to the inverse impact of FDI. In order to determine the influence of income on the FDI and CO2 emission relationship, this study introduce dummies for different level of income groups (d1 – d4) to represent low, lower middle, upper middle- and high-income groups in the regression model. The sample is grouped following World Bank classification of countries based on income level. The results as presented in table 4 below suggests that the level of income have significant impact on the relationship between FDI and CO2 emission. In low-income countries, the results show that FDI has positive impact on CO2 emissions, and which could lead to environmental degradation. However, FDI is seen not to have a significant CO2 emission impact in lower middle and upper middle-income groups. While in the high-income countries, the results suggest that there is an inverse relationship between the FDI and CO2 emissions. This implies that FDI in high income countries reduce CO2 emissions and therefore promotes environmental sustainability. In addition, the results support the Pollution Halo hypothesis for the case of upper middle-income countries. On the other hand, the results find that on the average FDI has no significant impact on CO2 emissions among lower middle-income countries.

Table 4: Results of The Impact of FDI on CO2 Emissions Using LSDVC Initialized Based on The System and Difference GMM (Using Dummy for Different Level of Economic Development)

<table>
<thead>
<tr>
<th></th>
<th>Model 5 Blundell &amp; Bond System GMM</th>
<th>Model 6 Arellano &amp; Bond Difference GMM</th>
<th>Model 7 Blundell &amp; Bond System GMM</th>
<th>Model 8 Arellano &amp; Bond Difference GMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>l.lco2</td>
<td>0.775*** (0.015)</td>
<td>0.720*** (0.027)</td>
<td>0.783*** (0.015)</td>
<td>0.764*** (0.023)</td>
</tr>
<tr>
<td>lec</td>
<td>0.109*** (0.015)</td>
<td>0.204*** (0.036)</td>
<td>0.108*** (0.014)</td>
<td>0.223*** (0.030)</td>
</tr>
<tr>
<td>lrgdpc</td>
<td>0.059*** (0.019)</td>
<td>0.103*** (0.027)</td>
<td>0.056*** (0.015)</td>
<td>0.076*** (0.021)</td>
</tr>
<tr>
<td>d1fdi1</td>
<td>0.033*** (0.008)</td>
<td>0.023** (0.010)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results reveal important information. First, the results based on the full sample show that FDI reduces C02 emissions and therefore enhances environmental sustainability. This is in line with the pollution halo hypothesis. The premise here is that leads to the spread of environmentally friendly technologies and methods with reduces greenhouse gas emissions and therefore beneficial to the environment. This finding is consistent with Abdouli and Hammami (2017), who have found negative FDI-C02 emissions nexus. However, taking into consideration how income level moderates the relationship between FDI and carbon emissions revealed that FDI has asymmetry impact on C02 emissions. The finding of negative impact of FDI on carbon emissions is not consistent across all income levels. The results show that FDI has negative impact on C02 emissions among high and upper middle-income countries whilst among low-income countries, the results general show positive link between FDI and the emissions of carbon dioxide. Therefore, pollution halo prevails in the case for high and upper middle-income countries but pollution haven hypothesis in the case for low-income countries. These may imply that environmental priorities and consciousness among countries may be influence by the level of economic development. For instance, in the case of high-income countries environmental issues are receiving considerable attention. They have strict environmental regulations and strong institutions to ensure compliance. Further, these countries are encouraging the adoption of technologies which are friendly to the environmental by providing incentives to firms that adopt green technologies such as tax break and so on. This therefore means that FDI to these countries not only have to comply with strict environmental laws but have to innovate new processes which are environmentally friendly in order to compete favourably in these countries.

On the contrary, FDI to low-income countries pollute the environment by increasing the emission of carbon dioxide. This may be in tandem with the economic aspirations of countries in these income group. The first and most important policy is economic growth, even at the expense of the environment. There is usually high unemployment and poverty rate here among other economic and social vices. The focus is job creation first. Thus, firms that are unable to innovate and meet the stringent environmental regulation simply migrate to these countries and then export their output to the destinations of their choice. The problem is further aggravated by weak institutions and high corruption which makes enforcement of any environmental laws difficult.

It is important to state that research and development for clean technologies and processes usually involves substantial cost which some firms are not willing to invest, given the risk associated with R&D. Therefore, the low-income countries provide them with a way out for firms that do not want
to innovate. Instead, they adopt technologies which are unfriendly to the environment and human lives and simply export the product to other countries. Given the disadvantaged position of the low-income countries, FDIs in these countries increase carbon dioxide emissions and hence a source of environmental degradation. Similar finding has been reported by Lee (2010) and Acharyya (2009). In the case for lower middle-income countries, the result show evidence of insignificant impact of FDIs on CO2 emissions. This is in line with the weak version of Porter’s hypothesis. Palmer (1995) argued that the motivation to innovate is conditional upon cost benefit analysis. Thus, in the case for lower income countries, the incentive to innovate is not substantial and may not have out-weight its cost. Therefore, there is limited innovation which may not have much impact on environmental quality. The result supports Kim and Beak (2012).

Robustness Test

We run sensitivity analysis to verify if our estimations are robust. We re-estimate our model using the Anderson and Hsiao instrumental variable method. The results are presented in table 5. The results are consistent with those in table 3 and 4. First, the results confirmed the negative impact of FDI on CO2 emissions in the general sample and therefore support the pollution halo hypothesis. However, taking into account the role of income level, the result confirmed the asymmetry effect of FDI on carbon dioxide emissions. The results generally confirmed pollution halo hypothesis among high and upper middle-income countries. On the contrary, the study finds strong evidence for pollution haven in the case for low income countries and therefore increases carbon emissions. However, FDI is found not to affect C02 emissions significantly among lower middle-income countries.

Table 5: Results of The Impact of FDI on CO2 Emissions Using LSDVC (Using Anderson & Hsiao Instrumental Variable)

<table>
<thead>
<tr>
<th></th>
<th>Model 9</th>
<th>Model 10</th>
<th>Model 11</th>
<th>Model 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>$l.\text{co2}$</td>
<td>0.759***</td>
<td>0.782***</td>
<td>0.869***</td>
<td>0.863***</td>
</tr>
<tr>
<td>(0.023)</td>
<td>(0.025)</td>
<td>(0.014)</td>
<td>(0.012)</td>
<td></td>
</tr>
<tr>
<td>$\text{lec}$</td>
<td>0.220***</td>
<td>0.221***</td>
<td>0.070***</td>
<td>0.077***</td>
</tr>
<tr>
<td>(0.030)</td>
<td>(0.030)</td>
<td>(0.015)</td>
<td>(0.015)</td>
<td></td>
</tr>
<tr>
<td>$\text{rgdpc}$</td>
<td>0.106***</td>
<td>0.071***</td>
<td>0.060***</td>
<td>0.059***</td>
</tr>
<tr>
<td>(0.028)</td>
<td>(0.022)</td>
<td>(0.021)</td>
<td>0.017)</td>
<td></td>
</tr>
<tr>
<td>$\text{ldi} 1$</td>
<td>-0.020***</td>
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Note: $l.\text{co2}$ = log of lag of CO$_2$ emissions, $\text{lec}$ = log of electricity consumption, $\text{rgdpc}$ = log of real GDP per capita, $\text{fdi} 1$ = log of gross FDI inflow, $\text{fdi} 2$ = log of the ratio of FDI inflow to GDP, d1, d2,
5 Conclusion

This study uses data from 1995-2014 in a sample of 123 countries to investigate the impact of foreign direct investment on carbon dioxide emissions. Using the bias corrected least square dummy variable method, the results reveal that FDI improve environmental quality by reducing CO2 emissions. However, taking into account the effect of income levels on the relationship between FDI and environmental quality, the study finds that the relationship between FDI and CO2 emissions is asymmetric and conditional on income levels. The findings show that foreign direct investment reduces carbon dioxide emissions in high and upper middle income countries, but is found to increase the emissions of CO2 in low income countries.

The effect of FDI on CO2 emissions is heterogeneous. The high and upper middle-income groups tend to reduce the CO2 emissions but not the low-income countries. This may be due to the high-income countries have the absorptive capacity of FDI inflows but not for the low income countries. Thus, promoting the human capital, financial development and better institutions are crucial of low-income countries in order to attract more high tech and green FDI inflows. Another dimension is that priorities of countries on environmental quality may be conditional on the level of economic development. Poor countries may be more incline towards means of sustenance at the cost of environmental quality. Institutions are weak to support and force implementation of environmental laws by foreign firms.

The problem of global warming requires concerted global effort to combat. Policy makers around the world must come together with sincere intention to address this problem. This is most important for developed nations to lead the fight and support weak developing countries in doing so too. While developed countries may have strong institutions and policies to curb some of the problems of climate, most low-income countries do not. Thus, policy makers in developed nations should have as a policy, basic environmental standards, which export products must fulfilled. This will discourage FDI relocating to the developing countries to avoid compliance in most developed countries.

The results of this study show evidence to suggest that the relationship between FDI and CO2 emissions may be conditional on income level and therefore level of economic development. Hence, at what income level does FDI reduces the emissions of carbon dioxide and promote environmental sustainability may require further investigation. Future studies therefore need to investigate the threshold impact of FDI on the environmental quality using economic development as threshold variable. This may be important for policy purpose.

References


THE FACTORS THAT INFLUENCE THE PREPARATION TOWARDS RETIREMENT AMONG GEN Y IN MALAYSIA

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ABSTRACT

Preparing for retirement is one of the most important elements of a comfortable post-retirement life. The purpose of this study is to investigate the factors that influence the preparation towards retirement among Gen Y in Selangor, Malaysia. In particular, this research investigated the relationship between demographic variables, attitude, subjective norms, perceived behavioral control, individual differences, and preparation towards retirement. This study used a convenience sampling method and involved Gen Y who are aged between 24 and 41 years old. Questionnaires were used as an instrument in this study. All the data was gathered from 384 respondents through an online survey. The questionnaire included the demographic profile of respondents and variable-related questions. This study uses the TPB as its main overarching theory, as well as life cycle hypothesis, symbolic interaction theory and prospect theory to frame its exploratory conceptual framework that explains the retirement preparation. The structural equation model predicts that attitudes, perceived behavioral control, and individual differences are positively correlated with preparation towards retirement among Gen Y, while demographic variables and subjective norms have no positive correlation. As a result of this study, Gen Y and other parties involved will realize that early preparation is crucial to sustaining after retirement. This research will benefit future researchers, government, insurance industries, and investment companies in gaining a better understanding of the factors that influence the preparation towards retirement. Finally, the thesis discusses the implications of the study to theory and practice, limitations, and recommendations for future research.

Keywords: Preparation towards retirement, Demographic Factors, Attitudes, Subjective Norms, Perceived Behavioral Control, Individual Differences, Gen Y.

1. Introduction

1.1 Background of the Study

There are several reasons for the growing body of research on retirement, however, lesser studies were carried out to determine the factors that influence the preparation towards retirement. Fadila and Alam (2016) stated that growing old is not simple because it affects several life changes which involve multiple transformations in an ageing person concerning their strength, capacity and flexibility. The loss of a permanent job is the first impact of the ageing population where they need to maintain their standard of living after their retirement. In Malaysia, the ageing population is expected to sustain at least 18 years on average after retirement due to increased life expectancy (Moorthy, Durai, Chelliah, Sien, Leong, Kai & Teng, 2012).

It is expected that the world population would consist of approximately 8.6 billion elderly people by the year 2030 and 9.8 billion by the year 2050 (United Nations, 2017). Specifically, in Malaysia, the ageing population (above 60 years old) has increased continuously from 1.5 million in 2000 to 2.1
million in 2018. As reported by the Department of Statistics, Malaysia, in 2018 the mean life expectancy of men and women was 73.2 years and 77.6 years, respectively which has increased throughout the years indicating retirees are active and live independently compared to the past generations (Hassan & Lawrence, 2018). Consumption of healthy food with consistent exercise in addition to the availability of a developed healthcare system, improved standard of living and growing level of literacy indirectly have led Malaysians to live longer after their retirement (Haron, Razali & Mohamad, 2019).

Improving longevity extends the lifespan, but the increase in life expectancy may not be safe for elderly people as the chances to get diseases are higher (Tosato, Zamboni, Ferrini & Cesari, 2007). Ageing can cause multiple diseases like coronary heart disease, stroke, influenza, pneumonia, lung disease, Alzheimer’s disease, diabetes and hypertension (Raghupathi & Raghupathi, 2018). Hence, the medical expenses required are more during the retirement period due to physical and social changes linked with ageing (Mafauzy, 2000). Since sustaining a stable income is quite critical in the later stage of life, the ageing population should focus on proper investment that guarantees income to support retirement as it is regarded as one of the challenges faced by them (Nga & Yeoh, 2018).

In Malaysia, the recent minimum retirement age is 60 years based on the Minimum Retirement Age Act 753 (2012). Most of the countries have retirement plans for employees of the government and private sectors. There are two options for government employees, which are the public pension plan and the Employee Provident Fund (EPF) plan, whereas private sector employees are only eligible to contribute for EPF plan. As for government employees, the pension fund is managed by Kumpulan Wang Persaraan (KWAP). Based on EPF annual report (2013), 84 percentage of active members have contributed less than RM 100,000 to their EPF account, which is insufficient to spend through 18 years of post-retirement. As reported by Haron, Razali and Mohamad (2019), Malaysians at the age of 54 years should have EPF savings of at least RM 228, 000 to have RM 950 as monthly income which can cover until the age of 75 years. Previous researchers (Hassan, Othman & Din, 2018) also indicated that the majority of Malaysians are only dependent on EPF, which is deducted from their monthly income. Furthermore, many governments and private sector employees assume that their monthly public pension or EPF money is sufficient to be spent for their remaining lifetime. Unfortunately, this is not true due to demand-pull and cost-push inflation and increasing prices of goods and services (Mohidin, Jamal, Geetha, Sang & Karim, 2013) which leads to a decrease in the purchasing power of the ageing population. Furthermore, researchers (Nga & Yeoh, 2018) also found that Malaysians need to develop financial planning skills and get sound financial advice on investments at a young age as well as adopt socially responsible and healthy lifestyles. According to the 2010 Population and Housing Census of Malaysia, 27% of the country’s total population is made up of Gen Y, which accounts for approximately 6.2 million people. Apart from that, Asian Institute of Finance (2015) reported that Gen Y is heading towards financial hardship, spending more than they could afford, getting entangled in emotional spending, and even on the edge of bankruptcy. Therefore, this study focuses on Gen Y who was born between the years of 1977 and 1994 and living in Selangor.

According to the recent development in the financial market, everyone needs to be educated and skilled in managing their finances. The availability of various financial products and services on the financial market has caused difficulties in financial decision-making. Furthermore, easy access to credit cards, technological advancement in financial services, and financial market deregulation have led to consumers doubtful about retirement financial plans and investment selection (Mahdzan & Tabiani, 2013). Han, Ko and Choe (2019) reported that a majority of people in their studies agreed that financial planning for post-retirement life is crucial. The most important aspect of preparation for retirement is planning. Financial planning in retirement is usually measured by the savings upon retirement.

Many studies have found that insufficient personal retirement preparation stems from factors such as saving behavior, confidence, time preferences, economic knowledge and risk attitude (Hanna, Waller & Finke, 2011; Mitchell & Utkus, 2003; Tanaka, Camerer & Nguyen, 2010; Van Rooij, Lusardi & Alessie, 2011). Nevertheless, influential behavioral and intention factors on preparation towards retirement are only partially understood. Ajzen (1985) claimed that, the behavioral factors are postulated as the underlying cause of behavioral success. Based on the theory of planned behavior
(TPB), the probability of behavior occurring depends on the result of behavioral factors of people who engage in that behavior (Sharma, Chrisman & Chua, 2003). The study was conducted using the Theory of Planned Behavior (TPB), which has been extensively used to investigate different financial planning topics (e.g., intention to use Islamic banking, credit card usage, internet banking adoption, insurance purchasing, etc.) but not on preparation towards retirement behavior. The conceptual framework of the study was also supported by other retirement planning theories, such as Symbolic Interaction Theory, Prospect theory and Life Cycle Hypothesis.

This study examines how factors such as age, education, level of financial literacy, moral obligation, organizational commitments, financial adviser, asset accumulation, investment action, insurance protection, proactive and time discounting influence the preparation towards retirement. Therefore, this study aimed to examine factors that influence the preparation for retirement among the Gen Y in Selangor, Malaysia. The findings from this study are expected to create awareness among the younger generation for the right retirement saving plan now to avoid financial constraints later after retirement.

1.2 Problem Statement

The dream of having a comfortable retirement is a goal that everyone strives to achieve. The retirement process requires planning and years of determination, even though it is known when to retire, but a precise direction is not provided as to when the job ends. Previous researchers (Antolin, 2010; Banks & Blundell, 2005) reported that numerous global studies have revealed that people do not save enough during their working years. Researchers (Sabri & Juen, 2014; Samad & Mansor, 2013; Sharma, 2012; Yusuf, 2012) reported that this similar problem is widespread in Malaysia. Moreover, Thakur, Jain and Soni (2017) also supported that people are not properly educated and informed about the importance of early retirement preparation for their future needs in Malaysia.

In the Malaysian context, the study revealed that a large number of Gen Y working adults lack an understanding of financial aspects, including retirement planning, savings, and other financial decisions (Masran & Hassan, 2017). These researchers also found that people from age 30 to 40 are assured that they are ready to retire because of enough savings in their Employee Provident Fund (EPF), while the truth is that people at the age of 55 are still not prepared for retirement due to their late age and lack of preparation. However, only a minority of people are aware that most people do not have sufficient funds in their EPF account for their future retirement (Editorial, 2014). Based on the EPF 2014 annual report, the report shows that 68% of the members were able only to accumulate savings that were RM50,000 and less due to early reasonable withdrawals (Zulaikha Arfudi, 2015). An EPF statement also indicates that about 80% of workers approaching 55 years old have insufficient savings in their funds to cover their needs after they retire (Zulaikha Arfudi, 2015). These findings indicate that Malaysians are struggling to sustain their basic needs when they retire and they also indicate that early retirement planning is needed so that Malaysians will have enough funds in their retirement years and necessary actions must be taken so that they will have enough time to adequately prepare for retirement. As a result of these problems, Gen Y in Malaysia has poor savings planning for their retirement. Furthermore, the Gen Y generation today feels that early retirement is a burden and a problem because it requires continuous and long-term planning (Moorthy et al., 2012). Since there were few empirical investigations addressing preparation towards retirement among the Gen Y in Malaysia, this study will reveal the broader knowledge on preparation towards retirement among Gen Y particularly in Selangor, Malaysia.

Demographic factors like age and education level play significant roles in financial retirement planning. Although previous researchers (Selvadurai, Kenayathulla & Siraj, 2018) found that young people can start to prepare for retirement as they have ample time to plan their retirement wisely; however there is a lack of knowledge regarding the relationship between age and preparation towards retirement in Malaysia. The research on the empirical works reveals that today’s young generation think that retirement is far away in the future and that majority of young people are not realizing the importance of retirement in their life (Hassan, Rahim, Ahmad, Zainuddin, Merican & Bahari, 2016). However,
some researchers stated that some educated people do not know how to manage their finances well and they spend lavishly (Selvadurai, Kenayathulla & Siraj, 2018). A recent study by Visyalini (2018) observed that education level does not positively correlate with retirement planning because an educated population does not take advantage of retirement planning, yet still maintains a standard of living in retirement.

The initiative to save for retirement is largely ignored by Malaysians, even though there have been a lot of retirement products introduced (Ibrahim, Isa & Ali, 2012). These researchers also indicated that this is because due to a lack of knowledge about the importance of financial literacy and retirement preparation, they experience this problem. Previous researchers (Masran & Hassan, 2017) found that it is common practice in Malaysia for people to spend their salary first before saving money, and when they are able to save money from their salary, they are not appropriately allocating their money to their personal savings account. Apart from that, a recent survey found that the young and older citizens in Malaysia lacked basic financial knowledge and concepts, resulting in serious implications for saving, retirement planning, mortgages, and other decisions (Moorthy et al., 2012).

As reported by Zulaikha Arfudi (2015) Malaysians have a mindset that the children will always take care of them after they retire, but the truth is that the cost of living has been steadily rising and the economy is not stable and prone to fluctuation. Researchers (Masran & Hassan, 2017) stated that if the children are incapable of providing enough financial support for their families in the future, they may not be able to adequately care for their parents when they retire. Thus, individuals must take precautionary steps in order to sustain themselves upon retirement.

Visyalini (2018), claimed that due to the increase in living costs, many people are having difficulty saving money because their monthly income is just enough for household expenses, medical bills, and schooling expenses of their children. Researchers (Mansor, Chor, Abu & Shaari, 2015) observed that individuals who do not plan their retirement well will need to work even when they retire to meet their living expenses. As stated by Visyalini (2018), financially unprepared retirees might feel the pinch when faced with unexpected expenses such as paying for large medical bills.

The more alarming statistic is that few Malaysians have a long-term financial plan and only 40% of them are financially prepared for retirement (Zulfaka & Kassim, 2021). According to Financial Stability and Payment Systems Report (2015), reported that 76% of Malaysians admit to facing difficulty in raising at least RM1000 to meet emergency needs. A prolonged retirement period is not possible through EPF savings alone. Previous researchers (Ngui, 2016; Shukri, 2014) reported that nearly nine out of ten Malaysian households do not have emergency savings apart from having considerable debts of their own. Hence, this study had been investigated the relationship between factors such as demographics, attitudes, subjective norms, perceived behavioral control, individual differences and preparation towards retirement.

2. Literature Review

2.1 Preparation towards retirement

Preparations for retirement have emerged as central priorities for social security (Helman, Copeland & Vanderheil, 2015). According to Coni, Baldini, Stacchini and Zanasi (1992), everyone must plan for retirement at some point in their lives, and even children of school age should learn about retirement. Educating younger people about aging and the complexity of aging is also important. Therefore, younger people should start financial planning early in order to have an adequate income and secure retirement capital.

It is natural for studies of retirement preparation to assume that people will retire at a certain age. It has been reported that earlier than expected retirement is related to adverse health conditions and labor market shocks (Anderson, Burkhauser & Quinn, 1986; Loughran, Constantijn, Hurd & Reti, 2001). In retirement, retirees may choose when to retire and how much they want to save for their retirement.
excluding injury or illness. Atchley (1992) points out that retirement is not an unplanned event in people's lives, and the young generation should take retirement seriously since it contains a series of steps to be taken by the individual during the active working years.

As presented by Joo and Grable (2005), not everyone has sufficient savings for post-working or retirement life due to limited savings or lack of assets to generate income. However, planning for retirement is an option of personal choice. It needs a conscious decision by the individual to allocate income to allow for financial security upon retirement. Therefore, before withdrawing from active service, there is a need to prepare towards retirement to help the individual overcome possible shock retirement (Loether, 1999). The lack of retirement planning can cause some disappointment during retirement yet planning for retirement is not an easy process (Lee & Law, 2004). Therefore, preparation towards retirement is extremely important. According to researchers, there are factors that could lead individuals towards preparation for retirement.

2.2 Demographic Variables (Age and Education Level)

According to United Nations Statistics Division (2014), demography is literally the description of people. There are many demographic characteristics that are often studied, including age, gender, living arrangement, education, race, marital status, income level, and health (Visyalini, 2018). The demographic characteristics of each group are analyzed instead of by the individual. Most of the research on retirement planning has studied demographic variables, by investigating the efficacy of the extended TPB model to explain variance in retirement planning behavior beyond the effect of demographic variables. The data shows that the date compared to those who are involved in little preparation, those who do more arrangements tend to be older (Petkoska & Earl, 2009); well educated (Yuh & Olson, 1997); and obviously, closer in proximity to the expected date of retirement (Ekerdt, Kosloski & DeViney, 2000). DeVaney (1995) has concluded that educational levels and household income are important factors in guiding retirement planning.

According to the previous researchers (Mansor et al., 2015) demographic characteristics like age, grade level, gender, and household income are essential to retirement preparation. The age of a person is one of the main factors contributing to preparation toward retirement (Richardson & Kilty, 1989; Joo & Pauwals, 2002; Devaney, 1995). Researchers (Alwi, Amir Hashim & Ali, 2015) also supported that demographic variable positively influence the intention to saving behavior towards retirement. Based on Mahdzan and Victorian (2013), saving behavior has a positive relationship with demographic factors. As a result, people who are older will have more intention to save for retirement. In contrast, results for the education level do not indicate any correlation between education level and savings behavior. Moreover, Baljit and Zubair (2018) concluded that the education level of the individual had no impact on his savings behavior. Hence, this study would like to reveal new evidence on the relationship between demographic variables such as age and education level and retirement preparation, particularly in the context of Malaysia.

2.3 Attitudes (The level of Financial Literacy)

According to Zandi et al. (2021), an individual's positive or negative attitude towards retirement planning is an important factor in determining his or her intention or readiness to prepare for retirement. People are likely to have varying attitudes towards retirement planning due to factors like their age, gender, work responsibilities, lack of identity, fear of being abandoned, and aloofness (Zappala, Depolo, Fracaroli, Guglielmi & Sarchielli, 2008). Thus, the study will investigate positive attitudes towards retirement preparation through their level of financial literacy.

In recent years, financial literacy has been highlighted as an important factor contributing to successful retirement planning (Visyalini, 2018). As stated by Hung, Parker and Yoong (2009), the financial literacy model was developed by four dimensions including financial knowledge, financial skills, perceived knowledge, and financial behavior. Previous researchers (Lusardi & Mitchell, 2013; Xiao,
Chen & Sun, 2015; Khan, Rothwell, Cherney & Sussman, 2017) also supported that this financial literacy model consists of knowledge, skills, and attitudes that influence financial behavior.

Previous researchers (Chai et al., 2019) claimed that there is a strong correlation between retirement preparation and financial literacy, as retirement planning consists of a certain level of knowledge and uncertainty. Comparatively, those with financial literacy are more likely to be able to plan for retirement compared to those who are financially illiterate. Financially literate individuals understand the importance of retirement planning and they normally accumulate funds to prepare towards retirement. According to Sabri and Juen (2014), people who are financially illiterate or unskilled are more likely to overestimate their pension and savings. As stated by Boisclair, Lusardi and Michaud (2017), financial literacy will result in an improvement in financial condition. Therefore, researchers concluded that people with strong financial literacy will be well prepared for retirement.

2.4 Subjective Norms (Moral Obligation, Organizational Commitment, Financial Advisor)

According to Zandi et al. (2017), subjective norms (SN) or societal influence can be defined as the pressure placed on the individual by society, affecting their decision whether to engage in a certain behavior or not. More specifically, SN refers to an individual's perceptions or opinions about things that he or she should do (Yusof, Sabri, Rahim & Jusoh, 2018). The focus of this study is on moral obligation, organizational commitment, and financial advisor as forms of subjective norms.

Early retirement decisions of individuals are also influenced by the decisions made by their spouses (Chou, Yu, Chan, Chan, Lum & Zhu, 2014). An additional study from Malaysia's Taylor's University also found a positive correlation between parental socialization and young people saving for retirement (Alwi, Amir Hashim & Sharook Ali, 2015). Their research also indicated that Taylor's university Gen Y students tend to consider investment in retirement funds seriously when their families prioritize retirement planning and are aware that they have enough information on financial matters.

Research findings by Duflo and Saez (2003) suggest that the effects of colleagues may influence employees' decisions to apply for a savings plan and to make retirement planning decisions. Previous scholars (Bongini & Cucinelli, 2019) also argue that colleagues’ pressure has an impact on Gen Y's decision to invest in retirement. Workplace or institutional support is an important impact on financial preparedness towards retirement (Segel-Karpas & Werner, 2014).

There are many uncertainties surrounding longevity after retirement which could derail the achievement of retirement aspirations and plans. From the retirement planning perspective, financial advisers often guide clients in setting measurable goals, diversifying retirement accounts, and being better prepared for emergencies (Marsden, Zick & Mayer, 2011). In addressing their clients’ often glorified expectations, financial advisers need to garner trust and obtain information on pertinent personal matters including income, family matters, health, and the possibility of working after retirement. Financial advisers are able to recommend and customize long-term plans that address the gap between the client’s current and future plans through proper diversification of investments (Nga & Yeoh, 2018; Salter, Harness & Chatterjee, 2011; Savage, 2006). Previous researchers (Sterling, Herbison & Martin, 2017) found that qualified financial advisers tend to attract more financially knowledgeable clients in the United States.

2.5 Perceived behavioral Control (Asset Accumulation, Investment Action, Insurance Protection)

As defined by Ajzen (1991), perceived behavioral control (PBC) referred to the ease or difficulty of performing a behavior based on prior experiences and future obstacles that have to be overcome in order to achieve the behavior. As a result, an individual's beliefs will influence his/her behavioral intentions and motivate him/her to engage in the target behavior (Yean, Johari & Sukery, 2015).
Several studies have shown that keeping a higher asset allocation like stocks near retirement is beneficial to a greater accumulation of wealth for retirement (Pfau, 2009; Schleef & Eisinger, 2007; Basu & Drew 2009). Furthermore, the primary goal of investors is to accumulate assets in order to ensure that they can maintain a reasonable standard of living after retirement, under minimal risk (Forsyth & Vetzal, 2019). In recent years, individuals have become increasingly aware that asset accumulation influences the preparation towards retirement. A study by Lee and Kim (2016) examined the positive relationship between asset accumulation and retirement preparation. To determine the role of the potential for retirement savings and asset accumulation, this study used the 2013 Survey of Consumer Finances (SCF). They found that households with higher levels of a propensity for planning, such as borrowing, saving, or investing, or taking financial advice have a greater tendency to accumulate more assets for their retirement. Apart from that, several studies also supported that asset accumulation is an important factor that influences retirement preparation (Hariharan, Chapman & Domian, 2000).

According to Irawan (2018), the retirement plan is important for achieving retirement income goals influenced by investment action that would result in financial security upon retirement. This study also explored that investment action has a direct impact on the retirement plan, which ensures the achievement of future financial goals. Apart from that, Seetharaman, Niranjan, Patwa and Keriwal (2017) also supported that a survey of Singaporean accounting and finance professionals showed that investment action positively influences retirement preparation. Apart from that, Jamaludin and Gerrans (2015) also claimed that a good investment decision is important since the members are actually getting relatively low investment returns since the EPF mostly invests in low-risk or middle-risk options. According to Calvet, Campbell and Sodini, (2007), most people are not willing to deal with the complexity and difficulty of making investments. As well as that, some people, in spite of knowing the importance of investment decisions, may delay or procrastinate it, whereas others stay passive about investment decisions and others assume the future is too far away (Guiso & Jappelli, 2006).

Kock, Yoong and Fatt (2012), found that most retirement funds are typically spent on medical expenses. However, income is necessary to ensure that an individual is able to lead a normal life, and at the same time to cover the extra expense of medical care at old age (Bodla, Garg & Gingh, 2003). Therefore, a retirement plan from an insurance company provides financial support, family protection, and health care during the period when an elderly person cannot work (Gamage, 2016). Many people choose to make provisions for uncertain futures by acquiring life insurance, annuities, and pension plans (Garman & Forgue 2006). The idea of a life insurance system allows a given amount of pension savings of an individual to be used for benefits under all the risks in retirement (Stiglitz & Yun, 2005). In the context of Malaysia, this study will examine whether perceived behavioral control including asset accumulation, investment actions, and insurance protection impacts the preparation for retirement among Gen Y.

Individual differences are characterized by a wide variety of variables that vary between people (Gratian et al., 2018). These researchers indicate that individual differences can be classified into four major categories including demographic factors, personality traits, risk-taking preferences and decision-making styles. Research by Griffin, Loe and Hesketh (2012) presented that their study included individual differences which are rarely addressed in research on the TPB model to influence behavior. Therefore, in accordance with (Griffin, Loe & Hesketh, 2012) the present study included individual differences in proactivity and time discounting in the TPB model to examine whether individual differences affect Gen Y behavior in Selangor, Malaysia.

Proactive personality defines a person who is forward-thinking, self-starting, and determined in behavior that is engaged in changing and improving their environment (Parker, Williams & Turner, 2006). Proactivity has been connected to main workplace outcomes that consist of seeking feedback (Ashford, Blatt & Vande Walle, 2003); pursuing personal and organizational goals (Frese & Fay, 2001); and energetically adapting to new environments (Kim, Cable & Kim, 2005). We claim that proactive
persons at the late-career stage of their lives will, by definition, be thoughtful about their preparation towards retirement and act to maximize the conditions of their retirement environment.

Based on Bidewell et al. (2006), stated that the need to comprise the idea of time in research of the retirement process, given that employees are considering, arranging for, and making decisions about a future event or period of time. Time discounting was introduced where it refers to the range that individuals will discount the perceived value of the future reward, into retirement studies. People differ in their propensity to involve in time discounting, and those with extraordinary levels of time discounting are more likely to personally devalue a delayed reward such as retirement finance, which results in them showing a preference for lesser, but currently available rewards. We recommend that those high in time discounting would be fewer likely to engage in retirement preparation since their tendency to focus on present rewards such as spending their money rather than saving for future retirement or spending their time for present satisfaction rather than investing or saving for their retirement.

2.7 Conceptual Framework

Figure 1: Conceptual Framework
3. Data and Method

3.1 Target Population and Sampling Frame

Sekaran (2006) define the population as the entire group of events or things that researchers wish to investigate. The population of this study includes Gen Y who were born in between year 1977 and 1994 to between from Selangor, Malaysia. Focusing on one particular state in doing research research among certain generation cohort is not new in the retirement context. In addition, the Baby Boomer population is declining and Generation X is gradually ceasing to work to retire. As a result, the "Generation Y" demographic will dominate and represents the largest demographic group, which poses retirement concerns.

3.2 Sampling Procedure

According to Ogula, (2005), sampling is a process or technique of choosing a sub group from a population to participate in the study. This study applied the convenience sampling method. This study randomly selected 384 people that represented who are aged between 24 and 41 in Selangor.

3.3 Sample Size

The population of this study is equal to 3,009,700 of Gen Y. In accordance with Krejcie and Morgan (1970) as cited by Sekaran (2003), a sample size of 384 Gen Y (for the populations of 3,009,700 Gen Y) is acceptable. Approximately 400 Gen Y respondents participated, mostly from administration, management, business, manufacturing, and education. Thus, an analysis of multivariate data could be conducted with this sample size for this research.

3.4 Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) Version 22.0 was used for the statistical analyses. The related categories were coded before all the data was entered into software. Each variable was entered into the software as they had been answered in the questionnaire. The research model of this study also was tested by using Smart Partial Least Square (Smart PLS) Version 3.0. analyze the reliability, convergent validity, discriminant validity, cross loading and part analysis for the hypothesis of this study.

4.0 Results

4.1 Response rate

The sample of this study consists of 384 respondents from Gen Y in Selangor. There are 800 sets of survey sets distributed to Gen Y who were randomly selected in Selangor. A total of 400 (50%) survey sets were returned. The effective response rate for this study was at 48%. Cohen et al. (2007) stated that for mail survey the response rate more than 40% was considered as good.

4.2 Demographic analysis

The total of 384 respondents’ profile was tabulated in Table 4.1 based on the demographic profile and background of the respondents based on the detail in the questionnaires. There are 37.5 percentage of respondents who come in groups of ‘30 to 35 years’ old. Apart from that, 36.7 percent of respondents belonged to the range of ‘24 to 29 years’ old. The remaining 25.8 percent comes from the category of ‘36 to 41 years’ old. In terms of academic qualification, about 36.2 percent of respondents were Degree/BA/BS holders, 28.6 percent were MA/MS/MA holders, 19.8 percent were Diploma/Higher
Diploma holders, 6 percent were Professional Degree holders, 4.7 percent were PhD holders, 2.6 percent were PMR/O-Level/SPM holders and the smallest percentage which was 2.1 percent came from the category of A-level/STPM holders.

Table 4.1: Demographic Profile of Respondents

<table>
<thead>
<tr>
<th>Demographic Categories</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>38</td>
<td>9.9</td>
</tr>
<tr>
<td>25</td>
<td>13</td>
<td>3.4</td>
</tr>
<tr>
<td>26</td>
<td>12</td>
<td>3.1</td>
</tr>
<tr>
<td>27</td>
<td>30</td>
<td>7.8</td>
</tr>
<tr>
<td>28</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>29</td>
<td>21</td>
<td>5.5</td>
</tr>
<tr>
<td>30</td>
<td>36</td>
<td>9.4</td>
</tr>
<tr>
<td>31</td>
<td>15</td>
<td>3.9</td>
</tr>
<tr>
<td>32</td>
<td>31</td>
<td>8.1</td>
</tr>
<tr>
<td>33</td>
<td>25</td>
<td>6.5</td>
</tr>
<tr>
<td>34</td>
<td>14</td>
<td>3.6</td>
</tr>
<tr>
<td>35</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>36</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>37</td>
<td>18</td>
<td>4.7</td>
</tr>
<tr>
<td>38</td>
<td>13</td>
<td>3.4</td>
</tr>
<tr>
<td>39</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>40</td>
<td>26</td>
<td>6.8</td>
</tr>
<tr>
<td>41</td>
<td>6</td>
<td>1.6</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMR/O-Level/SPM</td>
<td>10</td>
<td>2.6</td>
</tr>
<tr>
<td>A-level/STPM</td>
<td>8</td>
<td>2.1</td>
</tr>
<tr>
<td>Diploma/Higher Dip</td>
<td>76</td>
<td>19.8</td>
</tr>
<tr>
<td>Degree/BA/BS</td>
<td>139</td>
<td>36.2</td>
</tr>
<tr>
<td>MA/MS/MBA</td>
<td>110</td>
<td>28.6</td>
</tr>
<tr>
<td>Professional Degree</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>PhD</td>
<td>18</td>
<td>4.7</td>
</tr>
</tbody>
</table>

4.3 The Measurement Model

A bootstrapping method (5000) was used to determine significant levels for loadings, weights and path coefficients (Hair et al., 2011). According to Ramayah, Yeap and Ignatius (2013), bootstrapping technique was used to determine the significance level of weights, path coefficients and loadings. Hair et al. (2014), bootstrapping must run because a resampling technique that draws a large number of subsamples 5000 from the original data and re-estimates the model for each subsample. These subsamples, used to compute bootstrap standard errors, which allow for the computation of t-values and p-values for each indicator weight. (Refer to Figure 2). Thus, this measurement model was used to test reliability, convergent validity and discriminant validity and prior to testing the hypothesized model.
4.3.1 Discriminant Validity

Hair et al. (2013) suggested the loadings must be higher than cross loadings at least 0.1 to get sufficient discriminant validity. Thus, SmartPLS Algorithm was applied in this research to assess AVE value for each measurement model for discriminant model for discriminant model. As it can be seen in Table 4.2, the square roots of the AVE value and correspondent with non-bolded values which indicate the inter-correlation value between constructs. It demonstrated that these findings explain appropriate evidence for discriminant validity of the measurement model, in accordance with guidelines of (Fornell & Larcker’s, 1981).

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td>0.160</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID-Proactive</td>
<td>-0.227</td>
<td>0.024</td>
<td>0.799</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID-Time discounting</td>
<td>-0.250</td>
<td>0.008</td>
<td>0.632</td>
<td>0.768</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre_Retirement</td>
<td>-0.258</td>
<td>0.043</td>
<td>0.670</td>
<td>0.736</td>
<td>0.748</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPB-Attitudes</td>
<td>-0.332</td>
<td>-0.034</td>
<td>0.521</td>
<td>0.607</td>
<td>0.691</td>
<td>0.722</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPB-P.B.Control</td>
<td>-0.252</td>
<td>0.015</td>
<td>0.680</td>
<td>0.737</td>
<td>0.834</td>
<td>0.695</td>
<td>0.707</td>
<td></td>
</tr>
<tr>
<td>TPB-Subjective Norms</td>
<td>-0.155</td>
<td>0.001</td>
<td>0.662</td>
<td>0.573</td>
<td>0.665</td>
<td>0.540</td>
<td>0.714</td>
<td>0.760</td>
</tr>
</tbody>
</table>

*Note:* Diagonals represent the square root of the AVE while the off diagonals represent the correlations.
4.3.2 Coefficient of Determination (R²)

The structural model should be examined after the measurement models have been successfully validated. The primary criterion for the assessment of the PLS structural equation model is each endogenous latent value coefficient of determination (R²). Coefficient of Determination (R²) is to measure the proportion of an endogenous construct's variance that is explained by its predictor constructs (Hair et al., 2014). Furthermore, Hair et al. (2011) stated that values of 0.75, 0.50 or 0.25 describe as substantial, moderate, and weak. Therefore, Table 4.3 illustrates the value R² of this research is 0.754 and acceptable.

<table>
<thead>
<tr>
<th>Endogenous Constructs</th>
<th>R Square (R²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation towards retirement</td>
<td>0.754</td>
</tr>
</tbody>
</table>

4.3.3 Hypothesis Testing

Hypothesis testing was executed to validate the proposed hypothesis and to determine whether the relationship was supported or not supported. Based on Hair et al. (2011), the level of acceptance based on the path coefficient was at least 0.1 to impart the model. An acceptable significant level of at least 0.05 indicated to have a positive and consistent path coefficient value.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Std. Beta</th>
<th>Std. Error</th>
<th>t-value</th>
<th>p-value</th>
<th>Decision</th>
<th>R²</th>
<th>F²</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Age -&gt; Pre_Retirement</td>
<td>-0.013</td>
<td>0.028</td>
<td>0.453</td>
<td>0.651</td>
<td>Not supported</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>Education Level -&gt; Pre_Retirement</td>
<td>-0.040</td>
<td>0.022</td>
<td>1.784</td>
<td>0.075</td>
<td>Not supported</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>H3</td>
<td>TPB-Attitudes -&gt; Pre_Retirement</td>
<td>-0.165</td>
<td>0.042</td>
<td>3.952**</td>
<td>0</td>
<td>Supported</td>
<td>0.052</td>
<td></td>
</tr>
<tr>
<td>H4</td>
<td>Norms -&gt; Pre_Retirement</td>
<td>0.073</td>
<td>0.043</td>
<td>1.697</td>
<td>0.090</td>
<td>Not supported</td>
<td>0.009</td>
<td></td>
</tr>
<tr>
<td>H5</td>
<td>TPB-P.B.Control -&gt; Pre_Retirement</td>
<td>-0.450</td>
<td>0.061</td>
<td>7.434**</td>
<td>0</td>
<td>Supported</td>
<td>0.224</td>
<td></td>
</tr>
<tr>
<td>H6</td>
<td>ID-Proactive -&gt; Pre_Retirement</td>
<td>-0.104</td>
<td>0.043</td>
<td>2.425**</td>
<td>0.016</td>
<td>Supported</td>
<td>0.020</td>
<td></td>
</tr>
<tr>
<td>H7</td>
<td>ID-Time discounting -&gt; Pre_Retirement</td>
<td>0.193</td>
<td>0.057</td>
<td>3.386**</td>
<td>0.001</td>
<td>Supported</td>
<td>0.062</td>
<td></td>
</tr>
</tbody>
</table>

| Note: | *p < 0.05 (1.645), **p < 0.01(2.33) or t-value >1.65*(p<0.05); t-value>2.33**(p<0.01) |

Based on Table 4.4, it showed that attitudes (H3), perceived behavioral control (H5), proactive (H6) and time discounting (H7) were supported at a 1% significant level. Whereas, age (H1), education (H2) and subjective norms (H4) were not supported.

5.0 Conclusion

This research paper was conducted to identify the factors that influence the preparation for retirement in some selected areas in Selangor using the purposive sampling method. As discussed in the earlier chapter of this research study, the respondents were those who were between 24 and 41 years old. This was because preparation towards retirement should start at a young age. Preparing for 50 years and
above is too late to accumulate enough income to sustain. The questionnaires were collected from residents who live in Selangor. The study aims to evaluate the factors that influence the preparation towards retirement among Gen Y. Data was collected through a structured questionnaire and a total of 384 valid data was collected from respondents for statistical analysis.

In this study, the dependent variable of the study was preparation towards retirement while the independent variables were demographic variables (age and education level), theory of planned behavior (attitudes, subjective norms, perceived behavioral control) and individual differences (proactive and time discounting). The measurement model analysis was performed in order to analyze the internal consistency or convergent validity and the discriminant validity of the constructs. In this research paper, there are 22 items have been deleted because AVE does not exceed 0.50 and due to cross-loading process problem. Therefore, loading that was higher than 0.60 suggested by Hair et al. (2013) with Average Variance Extracted (AVE) exceeded 0.50 and Composite Reliability (CR) value must exceed 0.70 (Bagozzi et al., 1981). Thus, this study has adequate internal consistency or convergent validity. According to Fornell and Larcker (1981) criterion, the square roots of the AVE shown in the diagonals were greater than the values in the row and column of all the constructs related showing that the contracts established were distinctive.

Next, hypothesis testing was executed to validate the proposed hypothesis and to determine whether the relationship was supported or not supported. Based on Hair et al. (2010), a t-value above 1.65 was considered as significant at five percent level or (t-value > 1.65, p<0.05) whereas a t-value above 2.33 was considered as significant at one percent level or (t-value > 2.33, p<0.01). This study has proven that attitudes (H3), perceived behavioral control (H5), proactive (H6) and time discounting (H7) were supported at 1% significant level. Whereas, age(H1), education(H2) and subjective norms(H4) were not supported.

References


EFFECTS OF COVID-19 ON THE COST OF CONSTRUCTION ENTERPRISES: CASE OF CHINA

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ABSTRACT

Covid-19 epidemic has caused huge losses to the world economy, and its development speed and impact have far exceeded expectations. The outbreak of the epidemic is mainly concentrated in densely populated areas such as urban centers. Construction enterprises are labor-intensive enterprises, and the risk of increased costs is inevitable. This paper takes Chinese construction enterprises as an example, based on the survey report issued by the China Construction Industry Association on the impact of the Covid-19 epidemic on construction enterprises, analyzes the impact of the Covid-19 epidemic on the cost of construction enterprises, and provide relevant suggestions for how to deal with the risks of increased costs for construction enterprises.

Keywords: Covid-19 epidemic, Construction enterprises, Cost, Risk

1. Introduction

The financial cost control of construction enterprises is of great significance to construction enterprises. Cost management and control can optimize the allocation of resources and reduce the internal and external risks that enterprises may face in fierce market competition and emergencies. The COVID-19 outbreak is an emergency, which has delayed many construction projects and increased various costs, compressed the profit margin of construction enterprises and reduced their viability.

The rest of this paper is organized as follows. Section 2 is a literature review, and Section 3 introduces the basic information of the questionnaire survey conducted by China Construction Industry Association on the impact of COVID-19 on construction enterprises. Section 4 is data analysis, and Section 5 is conclusion.

2. Literature Review

With the outbreak of COVID-19, the unpredictability and destructiveness of public health emergencies have drawn much social attention. Due to its own characteristics, construction enterprises are more prone to cost control risks after the outbreak of major public health emergencies. Starting from articles similar to the content of this study, the research mainly focuses on three aspects: the impact of public health emergencies on the economy, the definition and composition of construction project costs, and the impact of public health emergencies on the cost control of construction enterprises. This paper summarizes the previous research results and establishes its own research scope and analysis direction by sorting out, supplementing and improving it.
2.1 The impact of public health emergencies on the economy

Since the beginning of the 21st century, various kinds of public health emergencies have occurred continuously in cities, especially major infectious diseases of international concern, which have brought great challenges to the public health system and the world economic system. The sudden, mass, widespread and destructive nature of urban public health emergencies have posed a serious threat to human health, life and property to a large extent, and disturbed the normal social and economic order. According to the Regulations on 《Emergency Response to Public Health Emergencies》 in China, a public health emergency refers to a sudden outbreak of a major infectious disease, a mass disease of unknown cause, a major food, drinking water or occupational poisoning and other events that seriously threaten the public health.

The idea of disaster economy originated from Mill, a famous Reformist economist in Britain in 1848, who believed that economic damage caused by disasters such as earthquake, flood, war and infectious disease could disappear in a short period of time. Therefore, the disaster problem has not aroused enough attention in the academic circle. It was not until the 1950s that the frequent occurrence of major natural disasters had a huge impact on the social economy, and the study of disaster economy began to formally enter the research category of economists around the world. In the 1980s, China began to study disaster economics. Disaster Economics published by Zheng Gongcheng (1998) constructed the theoretical framework of disaster economics for the first time, theoretically analyzed disaster economic issues from macro and micro levels, and laid a theoretical foundation for empirical research on disaster economics.

With the frequent occurrence of major public health emergencies, more and more scholars begin to pay attention to the impact of major infectious diseases on the economy. Some scholars gave the specific number of the impact of COVID-19 on annual GDP. Some scholars believe that it is difficult to accurately assess the impact of the epidemic when it is not clear when the epidemic will end. Some scholars have suggested that we should be highly vigilant against the impact of the globalization of the epidemic. Sheng Fangfu et al. (2020) believe that COVID-19 will follow a gradual transmission path from micro and medium to macro, from short to medium to long term, to individuals. Social, governmental and even global patterns matter. Therefore, in order to minimize the impact of the epidemic on the economy, it is necessary to strengthen counter-cyclical adjustment, promote the transformation and upgrading of traditional industries, vigorously develop new forms of business and new industries, strengthen support for enterprises, strengthen the role of consumption as the foundation, and improve the development level of modern supply chains.

2.2 The definition and composition of construction project cost

According to the principle of Marx's political economy, under the condition of commodity economy, cost is an important part of commodity value and belongs to the category of value. The construction project refers to the organization or activity that the construction enterprise combines human resources and other resources to achieve a set goal, and it is also the production object of the construction enterprise. Construction project is an organic whole composed of human, technology, resources, time, space and information elements, which affect each other. Take construction cost control as an example, the extension of the construction period, unreasonable construction organization design, cost rise will have an impact on the cost. Construction project cost refers to the construction enterprise with construction project as the cost accounting object in the construction process of the cost of production means transfer value and the value of the necessary labor of the laborer created by the monetary form, that is, a project in the construction process of all the total construction costs.

According to the definition of construction project cost, construction project cost includes the following two aspects: one is the transfer of the value of production materials in the construction process. Second, the value created by the laborer for himself through labor is distributed to everyone in the form of salary and its addition. According to the Financial System for Construction and Real Estate Development
Enterprises promulgated by China, "construction project cost consists of all expenditures directly consumed by the construction entity or helping the completion of the construction entity and all indirect expenditures incurred by the construction project department for the organization and management of construction production". The former refers to the direct cost of the construction project, including labor cost, material cost, machinery use fee and other direct costs; The latter is the indirect cost of the construction project, including the salary of site managers, insurance, inspection and test fees, labor protection fees, employee welfare fees, depreciation of fixed assets, etc., which constitute the total cost of the construction project.

2.3 The impact of public health emergencies on construction enterprises

At present, there are few research on the impact of public health emergencies on construction enterprises. Since the outbreak of COVID-19 in early 2020, all provinces and cities across the country have initiated level I public health emergency response (especially major level). After the launch of the emergency management mechanism, issues such as the impact of emergency emergencies on construction enterprises need to be further studied.

Lin Yongmin et al. (2020) analyzed the impact of epidemic prevention and control on project management, and analyzed the engineering management measures to deal with health emergencies, providing reference for engineering management and engineering change claims of engineering projects under public health emergencies. Fang Haibo et al. (2020) constructed the vulnerability assessment system of construction enterprises in major public health emergencies based on the PSR model, and conducted an empirical study with the data of construction enterprises under COVID-19. The following conclusions are drawn: First, the external environmental pressure faced by construction enterprises in different regions varies greatly in COVID-19; Second, there are differences in the ability of various construction enterprises to cope with COVID-19, with most enterprises having a good response capacity; Third, the vast majority of construction companies have suffered losses from COVID-19. Zhang Jingxiao et al. (2020), from the macroscopic policy, the enterprise strategy, organization, operation and organization performance of more than 290 enterprises and so on four aspects of management and technical personnel, the questionnaire survey to through analysis indicates that the factors affecting construction enterprises overseas business, and in central Honduras implementation of the project to make the case validation, puts forward the enterprise how to deal with a new outbreak hit, Ideas for promoting the Belt and Road Initiative.

According to the collected literature, since 2020, the academic circle has tended to focus on this topic. However, due to the short time of this phenomenon, few advanced theories and methods, and few cases, the research length is generally short and not detailed enough, the research scope is limited, and the research method is not convincing. To sum up, this paper takes the impact of COVID-19 on the cost of construction enterprises as the research object and takes the survey data of China Construction Industry Association as the data source to analyze the influencing factors of COVID-19 on the cost of construction enterprises. This paper attempts to provide construction enterprises with strategies to deal with the cost control risks caused by public health emergencies by comprehensively considering various factors, and provides ideas for the same type of research.

3. Data and Method

As a public health emergency, COVID-19 will have a significant impact on the operating costs of construction companies. In order to ensure the reliability and validity of the questionnaire design, the questionnaire design process follows the following process: Based on the intensive reading of relevant literature, the preliminary design of the questionnaire is completed by referring to the existing scales, and the preliminary draft is formed. Then, China Construction Industry Association invited academic experts in related fields to discuss the logical relationship between research variables and question design, adjust question wording and question classification, and add or delete some questions. Finally, the questionnaire was sent to some middle and senior managers of construction enterprises for pre-test, and the final questionnaire was formed according to their answers. Likert Scale (1= very
disagreeableness to 5= very agreeableness) was used to score the questionnaire options. The higher the number, the higher the degree, and vice versa.

The survey issued by the China Construction Industry Association on the impact of the Covid-19 epidemic on construction enterprises. By March 31, 2020, a total of 804 valid questionnaires had been collected, covering 30 provinces, autonomous regions and municipalities in China.

4.0 Results

4.1 Sample analysis

The construction enterprises involved in the survey were divided by Chinese regions, with 518 in eastern China, accounting for 64.43%; 184 in central China, accounting for 22.89%; and 102 in western China, accounting for 12.68%, as shown in Figure 1.

Figure 1: Regional Distribution of Participating Enterprises

According to the types of enterprises involved in the survey, the main qualification is housing construction engineering 659, accounting for 81.97%; There are 204 companies, accounting for 25.37%, whose main qualification is civil engineering; The main qualification for industrial equipment installation engineering is 105, accounting for 13.06%, as shown in Figure 2.

Figure 2: Types of Participating Enterprises

According to the scale of the enterprises involved in the survey, 50.37% of the enterprises with annual output value below 1 billion yuan, 24.25% of the enterprises with annual output value between 1 billion yuan and 5 billion yuan, 10.45% of the enterprises with annual output value between 5 billion yuan and 10 billion yuan, 7.34% of the enterprises with annual output value between 10 billion yuan and 20
billion yuan, and 7.59% of the enterprises with annual output value over 20 billion yuan, as shown in Figure 3.

Through the analysis of the sample, it is found that the survey results are highly representative. It can basically reflect the actual situation of Chinese construction enterprises during the epidemic.

4.2 Dimension analysis of cost increase

The survey shows that there are three main factors contributing to the cost increase and financial shortage of construction projects caused by COVID-19. The first is direct cost, and the most prominent factors are the average increase of labor cost 24.88%, the average increase of material cost 18.24%, and the average proportion of epidemic prevention investment in the total contract price 1.82%. The second aspect is indirect cost, which is mainly reflected in the increase of cost maintenance fee, with an average increase of 14.75%. The third aspect is the period expense (current profit and loss of enterprises), which is reflected in financial expense and loss caused by contract breach. 63.36% of enterprises are facing financial pressure and 55.85% of enterprises are facing contract breach respectively, as shown in Table 1.

Table 1: Factors Influencing the Rising Cost of Construction Projects

<table>
<thead>
<tr>
<th>Category</th>
<th>Classification</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct costs</td>
<td>Labor cost</td>
<td>Average rise</td>
</tr>
<tr>
<td></td>
<td>Material cost</td>
<td>Average rise</td>
</tr>
<tr>
<td></td>
<td>Epidemic prevention investment</td>
<td>Average proportion</td>
</tr>
<tr>
<td>Indirect costs</td>
<td>Increase in maintenance costs</td>
<td>Rising</td>
</tr>
<tr>
<td>Period costs</td>
<td>Financial expenses</td>
<td>Facing financial pressure</td>
</tr>
<tr>
<td></td>
<td>Breach of contract</td>
<td>Contract overdue</td>
</tr>
</tbody>
</table>

Through the statistics of the survey results, we also analyzed the influence of COVID-19 on the cost influencing factors of construction enterprises. Among them, the influential factors are delaying construction progress, wasting capital, reducing labor supply, leading to the supply of raw materials, making marketing plan difficult to implement and so on. These factors directly lead to the rise in raw material prices, investment in epidemic prevention, cost maintenance, staff wages, cash flow and other results, and ultimately affect the cost of enterprises, as shown in Figure 4.
The specific analysis of each element is as follows:

4.2.1 Increased investment in epidemic prevention

The survey showed that the average proportion of epidemic prevention costs to the total contract price was 1.82 percent. 56.22% of the enterprises said that the shortage of epidemic prevention materials was not enough to support the full construction after the gradual return of workers, and hoped that the government could help them buy epidemic prevention materials. In particular, during the outbreak period, the shortage of masks, electronic temperature guns and other materials was very serious, which led to the resumption of some projects, cannot be normal operation. In addition, 41.17 percent of the companies hope that the government will provide assistance and convenience to employees who return to work, such as centralized accommodation and shared meals.

4.2.2 Increased upstream costs

The survey results show that from the end of January to the end of March 2020, 66.04% of enterprises reported a decrease in the supply of labor and personnel, and 26.37% reported difficulties in recruitment. 19.90% of enterprises reported the increase of staff wages, with an average increase rate of 24.88%. 57.96% of the enterprises hope that the government and industry competent departments can provide human resources guarantee for enterprises to resume work and production and solve the problem of labor shortage.

Construction materials, mechanical equipment and other supplies supply chain is tight, the construction site because of raw materials can not be in place, there is a phenomenon of "slack". However, as the epidemic situation has gradually improved in many places, cement, steel and other construction materials manufacturers have gradually resumed production, and the shortage of materials has been alleviated to some extent. However, 56.72% of the enterprises still hope to open a green transportation channel to speed up the turnover speed of logistics and people flow. 42.41 percent of the companies reported that upstream supply chains such as raw materials have broken, and 31.09 percent reported that raw material prices have risen, with an average increase of 18.24 percent. Another 41.17% said the epidemic had an impact on personnel transportation and enterprise logistics.

4.2.3 Cost Maintenance costs increase 68.91% of the enterprises reported that shutdown caused capital waste and cost increase: The average increase of cost and maintenance expenses is 14.75%: The enterprise estimates that the output value loss brought by every shutdown day accounts for 36.32% of the following 100,000 yuan, 24.38% of the 100,000 yuan ~ 500,000 yuan, 11.69% of the 500,000 yuan ~ 1 million yuan, 12.69% of the 1 million yuan ~ 5 million yuan, 5.47% in 5 million ~ 10 million yuan, and 9.45% of enterprises daily loss of output value of more than 10 million yuan.
4.2.4 Increased expenses during the period

Shutdown has brought the impact of cost increase for enterprises, coupled with the upstream real estate industry capital backflow to ease the downstream construction materials price rise, resulting in the construction enterprise capital turnover pressure, cost control pressure. Some enterprises have reduced their cash inflow and are facing difficulties in capital turnover. 80.6% suggested that government departments provide subsidies for shutdown and epidemic prevention, and 62.81% supported multiple supportive policies to ease cash flow pressure.

4.3 Cause analysis of cost increase

(1) construction project to return to work after also will be required to enhance the health and safety, etc, during the outbreak of projects under construction projects, the government required by the competent department of epidemic prevention and control measures must be taken, construction companies also should be adopted according to the actual circumstances of the project of epidemic prevention and control of specific measures, including perfecting the site closure measures, prevention and control measures, daily monitoring, etc., For example, enterprises hire buses for point-to-point transportation of workers, on-site epidemic investigation and disinfection, purchase of medical protective equipment, isolation and treatment of suspected infected persons, etc., all of these measures will lead to the occurrence of costs. The prevention and control measures on the one hand is to implement the government's mandatory requirements, on the other hand is also in order to reduce and prevent the outbreak affect project implementation, the costs of such similar nature than a measures, as a result of the project for reasons not of the contractor, but in the outbreak period, and even provide workers with masks and other protective equipment is a very difficult thing, There are many construction personnel involved in the project construction, it is very difficult to purchase enough protective equipment in a short time, so the management cost increases.

(2) The project delay leads to the extension of the turnover rate of receivables and prepayments of construction enterprises, and the owners will default on the project payment, resulting in difficulties in project collection and continuous tight cash flow, so the cost of capital increases.

(3) Shutdown causes a waste of capital. Machinery and equipment put into production at the early stage of the project will continue to be consumed as equipment depreciation and maintenance costs as time goes by, so the cost of maintenance will increase.

(4) Price increase of raw materials, labor costs, equipment costs, etc.; The main production factors of the project construction are mainly human materials and machines. If the migrant workers used in the project are involved in the key areas of the epidemic, the labor workers cannot return to their posts and the project cannot continue to be constructed, resulting in a shortage of labor and an increase in labor costs. Moreover, in order to meet the deadline, the overtime work of the project increases additional labor costs. In addition, if the production of materials and equipment used in the project is prohibited by the manufacturer, when alternative brands or alternative materials and equipment are available, the contractor needs to apply to the owner for change and re-quotation; If there is no substitute available or the employer does not agree to substitute, the project will be short of construction materials and equipment. Before the epidemic is completely eliminated, the supply of various resources will have many constraints, leading to the rise in the price of raw materials. So the direct cost of the construction project increases.

4.4 Methods analysis of cost increase

In the face of the adverse impact of the epidemic, the enterprises involved in the survey generally took positive protective measures and adjusted their work safety and construction plans accordingly to ensure that "epidemic prevention and resumption of work at the same time". Mainly reflected in the following aspects:
(1) Personnel management
It is generally believed that the construction sites meeting the construction conditions should strictly manage the entry and exit personnel and strengthen the publicity and education of workers. 96.27% of the enterprises have done the temperature detection and health tracking of employees, and 71.02% of the enterprises have guaranteed the accommodation personnel and canteen meals.

(2) Site management
Many enterprises have also strengthened site management, made reasonable arrangements for construction work, set up a closed management system, set up special isolation sites, conducted nucleic acid tests for workers returning to work, and distributed free epidemic prevention materials to ensure the safety of epidemic prevention. 92.54% of the enterprises regularly carry out disinfection and sterilization in the project operation area, and 37.94% of the enterprises adjusted the functional division of the working space.

(3) Emergency management
The survey showed that 91.29% of enterprises have established an emergency response mechanism and made efforts to reserve epidemic prevention materials in the later stage.

(4) Schedule management
According to the survey, most enterprises have adjusted their production schedule, with 80.35 percent postpones the start of production, 79.85 percent readjusted their production plans, and 75.75 percent of them are gradually resuming work in batches. Fortunately, as of March 6, 2020, 74.76% of enterprises have resumed work.

(5) Intelligent management
With the development of Internet of Things, big data and 5G technology, many enterprises have adopted intelligent management methods in the epidemic. 55.35% of enterprises have shifted more positions to online office, and 47.64% have shifted more communication between enterprises and employees to point-to-point and online. Enterprises have significantly increased the level of using information technology and digital technology to replace relevant businesses, and the application degree of real-name labor service platform, online conference system, intelligent temperature detection system, collaborative office system and video monitoring system in enterprises has exceeded 50%. Some enterprises also apply artificial intelligence, resource ecological platform, project management information platform and so on.
Table 2: Analysis of Cost Control Measures

<table>
<thead>
<tr>
<th>Category</th>
<th>Classification</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel management</td>
<td>Employee temperature monitoring and health tracking</td>
<td>96.27%</td>
</tr>
<tr>
<td></td>
<td>Strengthen the publicity and education of workers</td>
<td>92.91%</td>
</tr>
<tr>
<td></td>
<td>Provide guarantee for accommodation personnel and canteen meals</td>
<td>71.02%</td>
</tr>
<tr>
<td>Site management</td>
<td>Strict management of personnel entering and leaving the site</td>
<td>97.64%</td>
</tr>
<tr>
<td></td>
<td>Disinfection of operation area</td>
<td>92.54%</td>
</tr>
<tr>
<td></td>
<td>Reasonably arrange the construction contents</td>
<td>87.69%</td>
</tr>
<tr>
<td></td>
<td>Site closure management</td>
<td>81.59%</td>
</tr>
<tr>
<td></td>
<td>Adjust workspace functions</td>
<td>37.94%</td>
</tr>
<tr>
<td>Contingency management</td>
<td>Formulate emergency response plan</td>
<td>91.29%</td>
</tr>
<tr>
<td>Schedule management</td>
<td>Delayed commencement</td>
<td>80.35%</td>
</tr>
<tr>
<td></td>
<td>Production plan adjustment</td>
<td>79.85%</td>
</tr>
<tr>
<td></td>
<td>Resumption of work in batches</td>
<td>75.75%</td>
</tr>
<tr>
<td>Intelligent management</td>
<td>Service real name system platform</td>
<td>77.74%</td>
</tr>
<tr>
<td></td>
<td>Video conferencing</td>
<td>63.31%</td>
</tr>
<tr>
<td></td>
<td>Intelligent temperature detection</td>
<td>60.07%</td>
</tr>
<tr>
<td></td>
<td>Video surveillance</td>
<td>58.83%</td>
</tr>
<tr>
<td></td>
<td>Collaborative office</td>
<td>58.08%</td>
</tr>
<tr>
<td></td>
<td>Online office</td>
<td>55.35%</td>
</tr>
<tr>
<td></td>
<td>Online communication</td>
<td>47.64%</td>
</tr>
<tr>
<td></td>
<td>Artificial intelligence</td>
<td>16.67%</td>
</tr>
<tr>
<td></td>
<td>Resource ecological platform</td>
<td>14.18%</td>
</tr>
</tbody>
</table>

4.5 Suggestions of cost control for construction enterprises

(1) Strict personnel control
It is suggested that construction enterprises should focus on the registration and screening of key employees before resuming work, pay close attention to their health status, and timely report and properly handle infectious diseases or suspected infectious patients once they are found. After the resumption of work, construction enterprises should take self-inspection and prevention and control measures to reduce the risk of large-scale outbreak of the epidemic in the site.

(2) Adjust the project implementation plan
Construction enterprises should timely change project implementation plans to reduce the impact of the epidemic, such as repurchasing equipment and materials and recruiting labor personnel from areas not seriously affected by the epidemic, so as to reduce the loss appropriately.

(3) Pay attention to the subcontractors and suppliers affected
Timely inquire subcontractors and suppliers, especially those who have a great impact on the implementation of the project, whether their performance of the subcontracting and supply contracts is affected by the epidemic, and ask them to submit impact statements and make corresponding countermeasures. Promote the construction of industry supply chain platform, establish the construction industry centralized procurement and financial service platform. Epidemic prevention materials will be incorporated into the supply chain to help enterprises solve the problem of shortage of epidemic prevention materials for resumption of work and production.

(4) Settle contract disputes such as breach of contract with legal means
Under the relevant provisions of the law, the COVID-19 outbreak should be classified as force majeure. Once the force majeure is determined, the party concerned may claim exemption from all or part of the liability; Based on this, the construction enterprise can claim the delay of the construction period, which is also supported by relevant precedents in the past. In addition, if a construction enterprise has an
impact on its solvency due to the epidemic, according to the relevant provisions, it can claim to apply the change of circumstances clause, and postpone the debt repayment through the re-signing of the contract after the negotiation between the bank and the enterprise. It can claim not to punish the employees who fail to arrive at their posts in a short time due to technical problems.

(5) Reduce the pressure of funds with good commercial work
The cost of epidemic prevention and control and the cost of labor, building materials and logistics incurred by enterprises during the epidemic period will be included in the cost of the project and added. Construction units, construction enterprises and general contracting enterprises should strengthen mutual assistance, reasonably share losses and negotiate to increase the proportion of project payment. The construction unit adopts electronic mail, online communication and other information means to carry out project process settlement and completion settlement, and timely pay various payments.

5.0 Conclusion

Based on the assumption that COVID-19 has increased the cost of construction enterprises, and combined with the actual situation of Chinese construction enterprises affected by COVID-19 according to the survey conducted by China Construction Industry Association, this paper conducts in-depth research on various influencing factors and common countermeasures of enterprises, and draws the following conclusions:

(1) Most enterprises attach great importance to the response to COVID-19 and are able to take better measures to deal with the epidemic; However, the epidemic still caused the project cost of construction enterprises to rise by affecting direct cost, indirect cost, period cost and other factors; Enterprises generally adopt measures such as strengthening personnel management, site management, emergency management, schedule management and intelligent management to reduce the cost control risks caused by the epidemic.

(2) to strengthen the management of the enterprise the study shows at the same time, also can be in strict control, to adjust project implementation plan, pay close attention to the subcontractor and suppliers affected situation and use legal means to solve the default contract disputes, do a good job business reduce financial pre-

References


RELATIONSHIP BETWEEN ENVIRONMENTAL REGULATION AND THE VOLUME OF IMPORT IN OECD COUNTRIES

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ABSTRACT

The Pollution Haven Hypothesis (PHH) is now the concern of various parties. The migration and growth of dirty industries will cause the occurrence of massive pollution resulting in the occurrence of unlimited environmental pollution that will affect not only human health, but also the economic activities of a country that needs to be emphasized. Therefore, this study examines the relationship between environmental regulation and the volume of imports whether the migration of developed countries to developing countries or third countries occurs to the destination country or vice versa. By using panel data, involving OECD countries from 2002 to 2020 and the fixed effect test applied, the results indicate that there has a negative relationship between the volume of imports and environmental regulation. The study proves that environmental regulation is influenced by the volume of imports. It can be concluded that there is the existence of PHH in OECD countries. By tightening the environmental laws will be able to prevent excessive pollution.

Keywords: Pollution Haven Hypothesis, Environmental regulation, Import, fixed effect, OECD

1. Introduction

1.1 Background of OECD countries

OECD or also known as the organization for European Economic Co-operation and Development was established in 1961 and consists of 35 countries with five pillars of vision and one of them is to build their strong economic activities among members.

1.2 Pollution and Pollution Haven Hypothesis

As we know the pollution refers to an act of polluting the environment with the waste of pollutants such as chemical, haze, heat and energy into the environment resulting in destructive effect that endanger human health, threaten natural resources and ecosystem. This will indirectly affect the economic activities of a country. While pollution haven hypothesis (PHH) refers to industrial activity that may flee or migrate to countries with laxer environmental policies due to increasing international fragmentation of production (Tomasz and Christina, 2016).

Undeniable that development on the economy is important for a country but the effect of unbalanced and rapid on development causes many to overlook and be less concerned about the importance of development in line with environmental care. Due to the desire to pursue development, the aspects of environmental care had to sacrifice and eventually it gives a huge impact on the country today. Moreover, we can see ourselves pollution occurs everywhere especially in the urban area.
According to Environmental Kuznets Curve theory (EKC’s) stated that in the early stages of development, the economic growth process is expected to limit the environmental degradation or it can say that it will be reducing environmental general health and biological diversity as illustrated in figure 1 as follows.

Figure 1: Environmental Kuznets Curve

This paper examines the relationship between the volume of import and environmental regulation among OECD countries which is involving 35 countries. The paper will discuss the introduction in section 1, in section 2 present the previous literature review that is related to our objective, section 3 presents the data and method used, section 4 discuss results on data and, last presents the conclusion of our research.

2. Literature Review

2.1 Previous Literature Review

In the relationship between environmental regulation and the volume of imports, Wang and Shen (2016) found that in their study shows there has a positive correlation between environmental regulation and environmental productivity when pollutant emission is considered. While, Sakiru et al., (2017) found a negative effect on the production of goods when there has a stringent implementation on environmental regulation while James A Tobey (2017) found that strengthen of environmental regulation has caused trade patterns to deviate by the dirty industry. A study that has been carried out by (Xionghe and Yanming, 2019) found that strengthening environmental policy cause low economic production due to the implementation of pollution treatment in China. Other studies by Wang et al., (2019) have found that environmental regulation does affect the location of firms in polluting industries. Folkowska A. (2020) found that there has a negative relationship between strengthen of policy with the pollution intensity and it prove the existence of pollution haven hypothesis. Moreover, a study conducted by Shang. L. et al., (2021) found import trade has a significantly positive effect on green technology innovation under the constraint of stronger environmental regulation.

Table 1: Summary of existing previous studies

<table>
<thead>
<tr>
<th>no</th>
<th>Author(s)</th>
<th>Objective</th>
<th>Countries</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wang and Shen (2016)</td>
<td>Environmental regulation and environmental productivity</td>
<td>China</td>
<td>Global Malmquist-Luenberger (GML)</td>
</tr>
<tr>
<td>2</td>
<td>Sakiru et al., (2017)</td>
<td>Production of goods</td>
<td>Ghana</td>
<td>The Autoregressive distributed lag (ARDL) bound test</td>
</tr>
</tbody>
</table>
3. **Data and Method**

### 3.1 Data of Study

This study has used data of panel from 2002 to 2020 for OECD countries in 19 years where it involves several types of independent variables such as foreign direct investment (measured in U.S dollar), income per capita (measured in U.S dollar), the volume of import (measured in U.S dollar), and the volume of export (measured in U.S dollar) and dependent variable as environmental regulation (measured in percentage - %). However, the relationship between the volume of imports and environmental regulation will be the focus of this study.

### 3.1 Method of Analysis

Panel data analysis has been used to examine the relationship between environmental regulations with the volume of import (M) is tested using the empirical equation as follows:

\[
\ln r_{it} = \beta_{0i} + \beta_{1i} \ln m_{it} + \beta_{2i} \ln ink_{2it} + \beta_{3i} \ln fdi_{3it} + \beta_{4i} \ln x_{4it} + \epsilon \quad (a)
\]

**Indicator:**

\[\ln r_{it} = \text{Environmental Regulation (measured in Environmental Performance Index- EPI)} \]
\[\ln m_{it} = \text{the volume of import} \]
\[\ln ink_{2it} = \text{income per capita} \]
\[\ln fdi_{3it} = \text{foreign direct investment} \]
\[\ln x_{4it} = \text{Volume of Export} \]
\[i = \text{variables involved}, \ t = \text{time}\]

### 3.2 Chow Test and Hausman Test

Following in testing the objective of the study, two tests will be used namely the first chow test and the second is the Hausman test as elaborate briefly below.

#### 3.2.1 Chow Test

Chow test is a method used to compare the common effect with fixed effect (Widarjono, 2009). In this research the Stata program that will be used and the hypothesis for the chow test are as follows;

\[H_0 : \text{Model of Common Effect} \]
\[H_1 : \text{Model of Fixed Effect} \]
H$_0$ hypothesis will be rejected when the p-value is smaller than 0.05 (< 0.05) and H$_0$ will be accepted when the p-value is greater than the value of 0.05 or 5 percent. ( > 0.05). While, H$_1$ hypothesis will be rejected when the p-value is larger than 0.05 (< 0.05) and H$_1$ will be accepted when the p-value is smaller than the value of 0.05 or 5 percent.

### 3.2.2 Hausman Test

After determining whether fixed effect or random effect is appropriate then the test, the Hausman Test is tested to determine whether fixed effect or random effect is more appropriate to use. According to (Gujarati, 2012) as a panel data regression model, this test compares the fixed effect and random effect model that should be used. The hypothesis is as follows;

\[ H_0 : \text{Model of Random Effect} \]

\[ H_1 : \text{Model of Fixed Effect} \]

H$_0$ hypothesis will be rejected when the p-value is smaller than 0.05 (< 0.05) and H$_0$ will be accepted when the p-value is greater than the value of 0.05 or 5 percent. While H$_1$ will be rejected when the p-value is larger than 0.05 (< 0.05) and H$_1$ will be accepted when the p-value is smaller than the value of 0.05 or 5 percent.

### 4.0 Results

#### 4.1 Chow Test: Fixed Effect

Following the result, it shows that H$_1$ did not reject since the p-value is smaller which the p-value is less than 5 percent or < 0.05.

The results from the chow test regression analysis chose the fixed-effect method as shown in Table 2. The coefficient of the dependent variables, environmental regulation, and independent variable, the volume of import was found to have a negative relationship. The coefficient of the volume of exports is statistically significant at the 5 percent level of significance and indicates that a one percent increase in the volume of imports will decrease environmental regulation by -0.2002487 percent.

<table>
<thead>
<tr>
<th>Source</th>
<th>ss</th>
<th>df</th>
<th>Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2.58818042</td>
<td>4</td>
<td>0.647045106</td>
</tr>
<tr>
<td>Residual</td>
<td>9.06555273</td>
<td>660</td>
<td>0.13735686</td>
</tr>
<tr>
<td>Total</td>
<td>11.6537332</td>
<td>664</td>
<td>0.017550803</td>
</tr>
</tbody>
</table>

Number of obs = 665
F( 4, 660) = 47.11
Prob > F = 0.0000
R-squared = 0.2221
Adj R-squared = 0.2174
Root MSE = .1172

<table>
<thead>
<tr>
<th>lnr</th>
<th>coef</th>
<th>Std. err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnm</td>
<td>-0.2008487</td>
<td>0.0030328</td>
<td>-0.79</td>
<td>0.427</td>
<td>-0.0083645, 0.0005457</td>
</tr>
<tr>
<td>lnfdi</td>
<td>-0.0004202</td>
<td>0.0004997</td>
<td>0.84</td>
<td>0.401</td>
<td>-0.0005609, 0.0000414</td>
</tr>
<tr>
<td>lnink</td>
<td>0.0933906</td>
<td>0.0068682</td>
<td>13.60***</td>
<td>0.000</td>
<td>0.0799045, 0.1068767</td>
</tr>
<tr>
<td>lnx</td>
<td>0.001219</td>
<td>0.0020207</td>
<td>0.40</td>
<td>0.688</td>
<td>-0.0004732, 0.0001699</td>
</tr>
<tr>
<td>_cons</td>
<td>3.349096</td>
<td>0.0712168</td>
<td>47.03</td>
<td>0.000</td>
<td>3.209257, 3.488935</td>
</tr>
</tbody>
</table>

*** Significant at 1% level of significance where the critical value is 2.586
** Significant at 5% level of significance where the critical value is 1.965
* Significant at 10% level of significance where the critical value is 1.647
4.2 Fixed Effect Method

From table 3, the results indicated that the chi-squared statistics was 37.7, which is greater than the chi-squared degree of freedom (d.f) and p-value less than 5 percent (<0.05). Thus, the null hypothesis (H₀) was rejected. The result indicated that the fixed effect model is more appropriate than the random effect model for the panel data.

Table 3: Result of Hausman Test

<table>
<thead>
<tr>
<th>Test Summary (2002-2020)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi square d.f</td>
<td>4</td>
</tr>
<tr>
<td>Chi square Statistic</td>
<td>37.7</td>
</tr>
<tr>
<td>Prob&gt;chi2</td>
<td>0.0030</td>
</tr>
</tbody>
</table>

5.0 Conclusion

Based on the result in the empirical analysis, it shows negative relationships between environmental regulations with the volume of imports. In this paper, the analysis looks at the relationship of how the total volume of imports affects environmental regulations.

We assumed that most the imports are from developed countries where countries have stricter environmental regulations. It means an increase in the volume of imports of clean products, for example, tourism and hospitality as well as education that may induce less strict environmental regulation in developing countries. Moreover, increases in the volume of imports affect environmental regulation negatively. According to (Xionghe and Yanming, 2019) most provinces in China have low economic production due to the efficiency of pollution treatment while polluting goods of production has a negative effect when stringent of environmental policy (Sakiru et al., 2017). We can conclude that there has the existence of pollution haven hypothesis among OECD countries.

Since the results show there has the existence of PHH among OECD countries through independent, the volume of imports thus, government especially as well as researchers should play a role in identifying problems and finding the solution to the problem so that it will not have a negative impact in the future, especially on the dirty industry of countries that still use more on labour-intensive in addition to tightening environmental regulation.

References


LONG-RUN SHIFTS OF THE BEVERIDGE CURVE IN PENINSULAR MALAYSIA, SABAH, AND SARAWAK

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ABSTRACT

Unemployment is one of macroeconomic issue faces by many countries that showing the inefficient use of the capital resources in the market. This paper evaluated the Beveridge curve for Peninsular Malaysia, Sabah, and Sarawak. The objectives were to find out the relationship between the unemployment rate and job vacancy rate. A series of job vacancies and unemployment was constructed from year 1982 until 2017. Secondary data (N=35) was analysed using the Simple Linear Regression to find out the causality and correlations between variables. The results shows that both Peninsular and Sarawak has a negative significant relationship between the variables which implies that the shifting of unemployment rate over the year was affected by the job creation. The Beveridge curve was constructed to shows graphical relationship between the job vacancies rate and unemployment rate. This study suggests that economic growth playing an important role through the job creation in way to eradicate the problem of unemployment. In addition, aside from the quantity of job creation, the quality and the location of the job vacancy also took an important role in affecting the number of jobless persons in the labour market.

Keywords: Unemployment, job vacancy, Economic growth, Peninsular Malaysia, Sabah, Sarawak

1. Introduction

Unemployment is one of the macroeconomic issues face by many countries especially in developing country such as Malaysia. Whereby, unemployment shows the inefficient used of capital resources and loss of material wealth within the country. Unemployment can be defined as an individual who are employable and seeking for a job but unable to find a job. According to the Department of Statistic of Malaysia unemployed can be classify into two that is actively and inactively. For the pass years shows that Malaysia had provided job vacancies and job opportunities. Despite the existence of job opportunity still there is exist significant amount of number unemployed person in Malaysia especially in Sabah. Sabah recorded as the second highest unemployment especially amongst youth. What causing this scenario? Why does there still exist numbers of people unemployed despite the number of job opportunities increasing?
This study tends to find out the relationship between the unemployment rate and job vacancy rate based on book of Full employment in Free Society which written by Sir William Beveridge. According to his analysis in the book explained the unemployment as a problem during the war and peace, diagnosis of the unemployment, the determinants of unemployment and the way to prevent it which mention the co-movement of unemployment and vacancy through the meaning of full employment in free society. Thus, this paper tends to examined the causality and correlation between the unemployment and job vacancy for Peninsular Malaysia, Sabah, and Sarawak.

This study will be organized into six (6) sections. Section 1 is the introduction – background and the research questions. Section 2 is the literature review. Section 3 is the methodology, followed by results in section 4. Theoretical explanation of Beveridge curve for Peninsular Malaysia, Sabah and Sarawak will be explained in Section 5. Data Finding and conclusion in section 6.

1.1 Labour Market in Malaysia
Malaysia is separated into two region which known as Peninsular Malaysia and Borneo. Malaysia has become one of the fastest developing countries among the ASEAN countries. According to the Department of Statistic Malaysia; the total area of Malaysia is 330,323 square kilometres with 13 states and 3 federal territories. In the year 2013, Malaysia was ranks as the 20th country with the lowest unemployment rate in the world.

Malaysia’s economic structure had undergone a massive change since it achieve the Independence Day in the year 1957. Whereby, starting from an agriculture-based industry towards the manufacturing-based industries. Malaysia economy had growing at a rate over 8 percent yearly until mid-1997. In the 1980’s Malaysia economy maintained a high growths rate accompanied with the low inflation rate. Malaysia’s economic experiences a change from agriculture based towards manufacturing based (i.e electronic production) had ensure a high employments rate. The Asian financial crisis occurred in the year mid 1997 had affect Malaysia economic tremendously. The crisis had negatively affecting the economic growth in various factors. The contraction in the GDP growth rate causing an obstruction of the employment rate later led to increase in the rate of unemployment (Ariff and Abu Bakar, 1999:3-4). According to the Ministry of Finance Malaysia, in the year 1997 the Malaysia facing a tight situation in labour market, which the employment was expected to grow in slower pace.

1.2 Unemployment in Peninsular Malaysia
Peninsular Malaysia which also known as west Malaysia which consists of 11 states and 2 federal territories. Figure below highlight that Peninsular Malaysia labour market was generally experience full employment in which the unemployment rate below 4 percent after the year 1990. During the economic crisis 1985/1986 hit the economic global, peninsular Malaysia’s unemployment rate went up to the highest peak in which 7.16 percent in 1986. Shows that before the crisis hit Peninsular Malaysia already experience an increasing amount of unemployment. After the crisis, the employment rate begins to rise and reach the lowest rate of unemployment in 1997 of about 1.94 percent.

According to Economic Planning Unit, between the year 1981 to 1985 there was an increase number of unemployment in the labour market which causing by the general slowdown in the output growth. The general slowdown in the growth of output during the fourth plan period affected the job vacancy creation. The huge number of individual enter the labour force cannot be covered by the number of new job generated within the year. The unemployment rate, thus, rise from 3.45% in year 1982 to 5.36% in year 1985 as shown in figure below. However, in part of Peninsular Malaysia constantly experience a full employment in which the unemployment rate below 4% starting from 1992 until the recent year despite the crisis occur which affected most neighbouring country.
1.3 Unemployment in Sabah

Sabah is located on the island of Borneo in which on the east side of Malaysia. Sabah ranked as the second highest population amongst state in Malaysia after Selangor with estimate population based on 2018 census by DOSM 3,921,000 person. Sabah GDP growth rate reportedly increase for the past 5 years [2011 (2.1%) – 2015 (6.1%)], which this positive momentum driven by the great performance in Services, Agriculture and Mining and Quarrying Sectors (Sabah Development Corridor).

According to Jun (2016:18) Sabah was the seconds higher job provider in the for the past 5 years from 2011 to 2015. Shows in the figure 2 below is the unemployment rate in Sabah from the 1980 to 2017. According to the Department of Statistic Malaysia, Sabah recorded the much higher unemployement rate compared to Sarawak. Even though Sabah record as the second higher job provider among state in Malaysia, still the unemployment rate still in the higher rate above 5 percent.
1.4 Unemployment in Sarawak

Primary sector (i.e., agriculture, forestry, and fishing) holds an important role in providing job opportunities in Sarawak, followed by manufacturing sectors (Furuoka, 2014:2-14). While in Sarawak, secondary industries, namely electricity, gas and water supply and construction contribute 10 percent job opportunities in labour market. Refer to figure 3 below shows that Sarawak unemployment rate shows a positive trend, which the rate is continually decreasing, and stay below 4 percent.

When the Asian financial crisis hit in mid-1997, many countries affected by it include Malaysia. Mentioned in Bulletin on Asia-Pacific Perspective (2002), state that when the crisis strikes in mid-1997, the share of agriculture in GDP in Malaysia increase. Whereby, agriculture absorbed more of the labour force and the total employment had increase. Based on the figure below, shows that in from 1990 to 1997 the unemployment decreases tremendously over the year. However, there are slightly increase in the UR in 1997 (3.9%) due to the shock from the Asian Economic Crisis. Sarawak’s UR was slightly high in 1998 (5%), however slowly decrease over the year.

Figure 3 Unemployment rate in Sarawak, 1982-2017

Sources: Department of statistic Malaysia

2. Literature Review

According to Soylu et al., (2018) and Hussainat and Ghnimat (2013) there are various type of unemployment in the countries such as;

i. Voluntary Unemployment which the individual that seek for higher wages and better job compared to their current jobs

ii. Cyclical unemployment which due to the changes in business cycles.

iii. Seasonal Unemployment due to the change in season, which happen mostly in the agriculture sectors.

iv. Technological Unemployment result from the changes in technology. This type of unemployment occurs when a company tend to used machine instead of human labour.

v. Structural Unemployment is a long-term unemployment caused by the shift or change in economy.

vi. Disguised Unemployment is the increasing of workers in the institution in which each one has a sub work does not offer him his basic needs.

The most visible impact of unemployment is poverty. According to Shah and Khuhawar (2019:p.1) state that unemployment creates poverty through the loss of source of income. Besides, unemployment also indirectly causing the rate of crime to increase. There existance of empirical finding from previous research on the relationship between crime rate and unemployment. Mention that crime rate has a positive relationship with the unemployment which an increase in unemployment causing an increase in
the rate of crime (Hussin, Abd Aziz, Ab Halim, and Samsuddin, 2020; (Tang, 2009); (Raphael, Steven, & Rudolf Winter-Ebmer, 2001).

High unemployment can be related with the low in consumption of goods and services. According to Beveridge employment depends on spending. Whereby, increase in spending increase the number of productions later will increase the employment. Explained that the production of the goods which demanded by the consumer will creates job in all sectors of the economy (Toossi, 2002). According to Belarbi, Cheikh, & Mostefaoui (2017) public spending bring a moral impact on an individuals income which through the creation of variaous job vacancies.

Keynesian (1936) stated that employment depends on the number of outputs being produce by the firm under the assumptions that the prices is fixed. Whereby, the quantity produced is a monotonously increasing function of the employment. This theory assumed that the employment result in increase in production, which led to increase in the income of the employees. The higher the income the higher the spending which later led to increase in demand for products. Thus, causing the increase in demand of labour in the market. The intersection between the curve of production and demand of product indicates the supply of labour needed in the market.

2.1 Beveridge Curve shifts

Beveridge curve originate introduce by the British Economist named William Beveridge in the year of 1930. Sir William Beveridge studied about the issues regarding unemployment and difficulties of matching workers. Theoretically, Beveridge curve shows the negative slope and is convex to the origin between the vacancy rate and unemployment rate. Beveridge curve is a graphical representation of the matching process that describes the relation between the vacancy rate and unemployment rate in the equilibrium within the market (business cycle) that had been looking at since the year of 1950s. The location of the Beveridge curve from the origin shows the efficiency of the labor market. According to Hansen (1970) Beveridge curve is are due to excess supply and demand which accompanied with the match of unemployed and vacancy in the labour market.

Basically, the curve explained that as the level of unemployment rate increase with the vacancies rate remains unchanged, this implies that there are decreasing in the labour market efficiency. The changes in the degree of the skills or job mismatch influence the labour market efficiency causes the Beveridge curve curve to shift over time. Beveridge Curve shift to the right indicate that increase in inefficiency of the labour market. Beveridge Curve shows the matching process that describe the relationship between the vacancies rate and the unemployment rate in equilibrium (Pater, 2017).

The relationship between the unemployment rate and vacancies rate over the course of a business cycle is one of the most established style facts of macroeconomic. Exist number of studies done by previous researcher support the hypothesis of BC. The relationship between job vacancy rate and unemployment rate can also relate to Okun’s Law which shows the inversed relationship between UR and growth rate of real output. Shift in Beveridge curve with higher level of unemployment than before at the same level of the vacancy rate, suggest a deterioration in the matching or hiring process in the economy (Diamond & Şahin, 2014).

3. Data and Method

This section specifies the model that will be used and the source of data collection. This study will use the annual time series data which from year 1982 to 2017. The data collected from the Department of Statistic Malaysia.

The dependent variable used in this study is the Unemployment rates. Unemployment refers to the individual who are employable and seeking for a job but unable to find a job. According to the Department of Statistic of Malaysia unemployment can be classify into active and inactively
unemployment in line with working age in the labour market. According to Hussainat et. al (2013:1) stated that unemployment as the most serious problem that can lead serious damage towards the individuals and community as a whole. Unemployment rates calculate by using the formula as follow;

\[
\text{Unemployment rate} = \frac{PU}{PL} \times 100
\]

Where,

- PU is the number of persons unemployed in the labour force
- PL is the number of persons in the labour force

Meanwhile the independent variable is the job vacancy rates. The job vacancy can be defined as a paid post that newly create, unoccupied, or about to become vacant; for which the employer is taking active steps and is prepared to take further steps to find a suitable candidate from outside the enterprise concerned and which the employer intends to fill either immediately or within a specific period of time (Eurostat, 2015). Based on the theory of Beveridge curve, vacancy playing an important role in affecting the unemployment within the country. The vacancy rate can be calculated by using the formula below;

\[
\text{Job Vacancies Rate} = \frac{VT+ET}{TVT} \times 100
\]

Where,

- VT is the number of job vacancy in the labour market
- ET is the number of employed persons in the labour market

To find out the correlation and causality between the two include variable the simple linear regression will be apply. The linear regression analysis enables to describe a straight line that best fits a series of variables exist in the study. The linear equations constructed as shown in the following;

\[
y = b_0 + b_1x + i
\]

Where;

- y= the predicted value of y, given a value of x
- x= the independent variable
- b0 = the y-intercept of the straight line
- b1 = Coefficient of independent variable
- i = error term

4. Results

1. Descriptive Statistics

The descriptive analysis been carried out in order to verify the characteristic of the variables include in the study. Table 1 below demonstrate the mean and standard deviation of unemployment rate and job vacancy rate for Peninsular, Sabah, and Sarawak. Based on the analysis, shows that mean of unemployment rate for Peninsular, Sabah, and Sarawak is 4.0868, 5.8389, and 5.2735 respectively. Sabah has the highest mean compared to the two other state, which indicate that Sabah face much higher unemployment problem. Meanwhile for job vacancy rate Sabah has the lowest mean in which only 2.5525 followed by Peninsular (3.4424) and Sarawak (3.9947). From the analysis, it can be seeing that Sarawak has the high job availability.

<table>
<thead>
<tr>
<th></th>
<th>Peninsular</th>
<th>Sabah</th>
<th>Sarawak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean</td>
<td>Std. Deviation</td>
<td>Mean</td>
</tr>
<tr>
<td>UR</td>
<td>34 4.0868</td>
<td>5.16696</td>
<td>5.8389</td>
</tr>
<tr>
<td>VR</td>
<td>34 3.4424</td>
<td>1.31041</td>
<td>2.5525</td>
</tr>
</tbody>
</table>
2. Pearson Correlation Analysis

The Pearson Correlation coefficient, r indicates the strength and direction of the relationship between the variables, which the value of r ranges from -1.0 or 1.0, a strong relationship. Meanwhile, r=0, there is no relationship. The r value can be interpreted as weak (r=.10 to .29), moderate (r=0.3 to 0.49) and strong relationship (r=0.5 to 1.0) (Cohen;1988).

Table 2: Pearson correlation coefficient Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Peninsular Malaysia</th>
<th>Sabah</th>
<th>Sarawak</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR</td>
<td>UR - .350*</td>
<td>- .156</td>
<td>-.613**</td>
</tr>
</tbody>
</table>

(*. Correlation is significant at the 0.05 level (2-tailed)
( **. Correlation is significant at the 0.01 level (2-tailed)

Based on table 2, the results show that the vacancy rate has moderate significant/negative correlation (r=-.350, p<0.05) with the unemployment in Peninsular Malaysia. For Sabah the VR has a weak/no correlation with the UR. Contrary with Sarawak, the result indicate that the VR has strong significant/negative correlation (r=-.613, p<0.01) with UR.

Using the Pearson correlation coefficient, the strength and direction between the variable can be identified. However, this method unable to distinguish which variable fall into independent or dependent variable. Therefore, linear regression will be used to indicate a causal effect between the two variables.

3. Linear Regression Analysis

The Linear regression analysis will determine the effect on vacancy rate towards the unemployment rate in Peninsular Malaysia, Sabah and Sarawak. The linear regression model construct as shown below;

\[ UR = b_0 + b_1 VR + i \]  

Where;

- UR= Unemployment rate
- VR= vacancy rate
- \(b_0\) = the y-intercept of the straight line
- \(b_1\) = Coefficient of independent variable
- \(i\) = error term

Table 3: Model Summary

<table>
<thead>
<tr>
<th>Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Summary</td>
</tr>
<tr>
<td>R</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>Std. Error of the Estimate</td>
</tr>
</tbody>
</table>

Table 3 shows the summarize of the result of the regression. Shows that the R2 value is 0.350, 0.156, and 0.613 for Peninsular Malaysia, Sabah, and Sarawak respectively. The R2 for Peninsular Malaysia indicate there is moderate and significant relationship between unemployment rate and vacancy rate. It shows that 35% of total variation in the unemployment rate can be explained by the job vacancy rate. Similar case for Sarawak, there is significant and strong relationship between the two variable, which 61.3% variation in unemployment rate in Sarawak can be explain by the job vacancy rate. Contrary, in Sabah shows that exist weak and insignificant relationship between the variables, which explain that the changes in unemployment was not causes by the changes in job vacancy.
Table 4: Coefficient

<table>
<thead>
<tr>
<th></th>
<th>PM</th>
<th>Sabah</th>
<th>Sarawak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Constant</td>
<td>VR</td>
<td>Constant</td>
</tr>
<tr>
<td>Unstandardized Coefficients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3.805</td>
<td>-.089</td>
<td>5.999</td>
</tr>
<tr>
<td>Std. Error</td>
<td>.274</td>
<td>.042</td>
<td>.297</td>
</tr>
<tr>
<td>Standardized Coefficients</td>
<td>Beta</td>
<td>-.350</td>
<td>-</td>
</tr>
<tr>
<td>Sig.</td>
<td>.000</td>
<td>.043</td>
<td>.000</td>
</tr>
</tbody>
</table>

The Coefficient table shows the necessary information to predict the relationship between the dependent and independent variable, whether the Job Vacancy rate (VR) contribute statistically significant towards the unemployment rate (UR). Looking at the table above, shows that VR for Peninsular Malaysia and Sarawak ($\beta=-.089$, $p=.043$) and ($\beta=-.391$, $p=.000$) has a significant relationship at level 5% and 1% with the dependent variable (UR) respectively. The coefficient shows a negative sign which indicate that the increase (decrease) in the unemployment rate related to the decrease (increase) in job vacancy rate. However, for Sabah found that the independent variable (VR) has no significant relationship towards the unemployment rate.

Based on the finding above, the following linear regression model has been established.

URPeninsular Malaysia = 3.805-0.089 VR + i  \hspace{1cm} (5)
URSarawak = 6.836 -0.391 VR + i  \hspace{1cm} (6)

The equation 5 above is interpreted as constants with coefficient value of 3.805 and VR contributing to the model. Means that, increase 1 unit increase (decrease) in job vacancy rate (VR) there is corresponding to 0.089-unit decrease (increase) in unemployment rate (UR) in Peninsular Malaysia. Meanwhile, equation (6) is interpreted as constant with coefficient value of 6.836 with VR contributing to the model. Based on the model above, shows for Sarawak that increase (decrease) 1 unit in job vacancy rate, the unemployment rate will decrease (increase) by 0.391 unit.

Table 5: Results of the hypothesis testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 (a)</td>
<td>1 0 (There is significant relationship between VR and UR in Peninsular Malaysia)</td>
</tr>
<tr>
<td>H0 (a)</td>
<td>1= 0 (There is no significant relationship between VR and UR in Peninsular Malaysia)</td>
</tr>
<tr>
<td>H1 (b)</td>
<td>1 0 (There is significant relationship between VR and UR in Sabah)</td>
</tr>
<tr>
<td>H0 (b)</td>
<td>1= 0 (There is no significant relationship between VR and UR in Sabah)</td>
</tr>
<tr>
<td>H1 (c)</td>
<td>$10$ (There is significant relationship between VR and UR in Sarawak)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>H0 (c)</td>
<td>$1=0$ (There is no significant relationship between VR and UR in Sarawak)</td>
</tr>
</tbody>
</table>

Table 5 demonstrate the results of the hypothesis testing on the analysis of the linear regression. Based on the result above it can be summarize that there is exist significant relationship between the unemployment rate and job vacancy rate for Peninsular Malaysia and Sarawak, therefore the null hypothesis is rejected. Meanwhile, for case of Sabah, the result indicates that there is no significant relationship between the variable, thus, the null hypothesis is accepted.

5. **Beveridge Curve for Peninsular Malaysia, Sabah And Sarawak**

Figure 4: Relationship between Unemployment Rate (UR) and Job Vacancy Rate (VR) for Peninsular Malaysia, 1982-2017.

Figure 4 above shows the Beveridge curve for Peninsular Malaysia, using the unemployment rate and vacancy rate from year 1982 to 2017. The economic crisis occurred in year 1985/1986 affecting the Malaysia’s labour market. The unemployment rate in Peninsular Malaysia had increase and hit the highest rate in 1986 with the job creation relatively low. After year 1990 the curve seems to flaunt an expansionary pattern, whereby, the unemployment rate had gradually declining and there is more job vacancy in the market. However, during the Asian Financial crisis hit in mid-1997 the labour market had been slightly, showing the unemployment rate increase accompanied with the low number of job availability.

Figure 5: Relationship between Unemployment Rate (UR) and Job Vacancy Rate (VR) for Sabah, 1982-2017.
Figure 5 above shows the Beveridge curve for Sabah, using the unemployment rate and vacancy rate from year 1982 to 2017. Mismatched between the demand of labour and supply of labour had become more relevant, in which the increase number of job vacancies, coexist with the high levels of unemployment (Bova, Jalles, & Kolerus, 2016, p. 1). As shown in figure above, illustrate that in the year of 2010 there are significant high number of unemployment (5.5%) despite there is increase in number of job availability in the labour market. Data finding betray that there is no significant relationship between the job vacancy and unemployment for Sabah as pointed out in the Beveridge curve. It can be concluded that the high amount of unemployment in Sabah can be affected by other factors such as job mismatch and skills. According to the former Chief Minister of Sabah Datuk Seri Mohd Shafie Apdal being choosy and incompatibility between the skills and job vacancies available in the industry causing the high unemployment in Sabah labour market.

Figure 6: Relationship between Unemployment Rate (UR) and Job Vacancy Rate (VR) for Sarawak, 1982-2017.

Figure 6 above shows the Beveridge curve for Sarawak, using the unemployment rate and vacancy rate from year 1982 to 2017. Based on the result analysis indicate that there are exist significant negative relationship between Sarawak’s unemployment rate and job vacancy rate. The result pointed out that
the increase (decrease) of Sarawak’s unemployment accompanied with the decrease (increase) of the job vacancies. Figure above illustrate from year 1999 onwards Sarawak experience high number of job availability in the job market and notable decrease in unemployment.

6. Conclusion

This study tends to examine the relationship between the unemployment rate and job vacancy rate in Peninsular Malaysia, Sabah, and Sarawak. The scope of the data used covered from 1982 to 2017. Found that, only Job vacancy rate for Peninsular Malaysia and Sarawak has a significant relationship with the unemployment rate, while Sabah’s vacancy rate is not statically significant affecting the unemployment rate. This support the theory of Beveridge Curve implied that there is negative relationship between the VR and Unemployment rate.

The growth of economic within the country playing an important role in eradicate the numbers of unemployment through job creation. According to Kapsos (2005) exist a string relationship between the economic growth and employment, whereby, economic growth generates more job opportunity which may led decrease in unemployment.

However, Sir William Beveridge mention that the higher number of job vacancy in the labour market does not guarantee to lowering the amount of unemployment. It is necessary that the quality and the locations of the job vacancy consider in a way to eradicate the high number of jobless people. The labour supply (job vacancy) must be capable in following the changes of labour demand.

The high number of jobless people in Sabah may causes by the inside factors despite the high number of vacancies. According to former Minister of Human Resources and Information Technology of Sabah there are few factors that causing an increasing amount of unemployment in Sabah which is the huge number of graduates student produce by high learning institutions and graduates mostly unwilling to work in the 3D sectors. Besides that, the type of job opportunities provide in the market is not match with the job demanded by individual may also causing a high amount of unemployment.

References


AN INVESTIGATION OF ECONOMIC GROWTH, YOUTH UNEMPLOYMENT AND INFLATION IN ASEAN COUNTRIES

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ABSTRACT

This study examines the relationship and interaction between youth unemployment (YU), inflation (INFLA), and economic growth (GDP) of ASEAN countries: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam from 1996 to 2019. This study aims to examine the relationship between youth unemployment, inflation, and economic growth throughout the selected period. The method of Panel Granger Causality test, Panel Autoregressive Distributed Log (ADRL) approach, Panel unit root test, Panel co-integration test, Mean Group and Pooled Mean Group, and MANOVA test was applied in this study. This study found that in long run youth unemployment as a significant negative impact where the increase in 1 percent of youth unemployment, it will decrease 0.24 percent of economic growth. For inflation, the result stated that inflation also has positive significant impact in the long run which means that the increase 1 percent in inflation, it also improves the economic growth with 0.31 percent. As in ASEAN countries, the bidirectional relationship between youth unemployment, inflation and economic growth exist with causality running from youth unemployment and inflation to economic growth in individual. Lastly, youth unemployment and inflation have an interaction and is a significant effect on economic growth. Therefore, it is recommended that ASEAN countries take the specific policies that are effective and impact youth unemployment, inflation, and economic growth for the ASEAN countries. This research is expected to help enhance youth empowerment quality policies and improve the development of youth employment.

Keywords: Economic Growth, Youth Unemployment, Malaysia, Granger Causality.

1. Introduction

In fact, unemployment and inflation are two unpredictably connected financial concepts. Over the long period, there have been a number of financial analysts attempting to explain the relationship among the concepts of inflation and unemployment. There are two conceivable clarifications of this relationship which are one within the short term and another within the long term. For short term there is there's a converse relationship between the two (Aminu, Manu, & Salihu, 2013).
1.1 Youth unemployment

In this paper, it is focusing on how youth unemployment and inflation affected on economic in ASEAN countries. Youth employment is one of the important indicators which will affect the economic growth. Worldwide, there are approximately 1.3 billion young people with the ages of 15 and 24 that we called youth. Their involvement in labour market has impact the socio-economic development for their countries in long term (International Labour Organization [ILO], 2020). Thus, youth unemployment rate still can be identified that its youth unemployment still in highest rate in other countries especially in Northern Africa and in the Arab States, at around 2.2 and 1.7 times the global rate, respectively. Therefore, it is important to help the youth enter the labour market. The global youth unemployment rate show to be increase to 0.1 percentage point in year 2020 and it will be rise further 0.1 percentage point in year 2021 (ILO, 2020).

As well as in ASEAN, based on the Figure 1, it shows that the youth unemployment rate is 3 to 5 times more than the adult unemployment rate in year 2019. This is because the unemployed of youth is facing the challenge that the stage of social-economic development. Therefore, according to the report of ILO (2019), the main problems of the youth unemployment are the large numbers of youth enter into the labour markets every year when there is lack of employment opportunities in particular in poor economies.

Figure 1: Youth vs Adult Unemployment in ASEAN Year 2019

Source: World Bank Data (2020)

Currently there was the increasing of youth unemployment in ASEAN as well. This may be at risk of going into reverse in future as fourth industrial revolution. The Member States of ASEAN have move towards for high production in export and skill-intensive, reflected to the higher labour of production. The changes vary considerably pattern across the region. There is more demanding for high-skill employment in Cambodia, Indonesia, Lao PDR, Philippines, Thailand and Vietnam. The data shows that it has 80 percent of the region’s workforce, and possible to grow by 41 percent or 14 million workers (ILO, 2019) and we also can refer to figure 1.1 which shows that the youth unemployment rate is 3 to 5 times more than the adult unemployment rate in year 2019.

1.2 Inflation

The relationship among inflation and economic growth are the subject that has long been intensely discussed and debated in the literature (López-Villavicencio & Mignon, 2011). A high economic growth in relation with low and stable inflation is the main objective of macroeconomic policy (Khan &
Senhadji, 2001; Seleteng, Bittencourt, & Eyden, 2013; Vinayagathasan, 2013). The rise of the price of good and service over time called inflation. Inflation will cause the cost of living increase. Somehow, there is common but not accurate to define the inflation that the increase in the money supply which is a misinterpretation of monetarism’s theory (Amadeo, 2018). Inflation also can be defined as the rise of prices for goods or services continuously in a country. There is a condition that the price of good and service increase over time. Once inflation rises, every currency of that you buy with a smaller percentage of good or service. On the other hand, if the price rises, the money value will fall that is inflation. Therefore, the value of current or unit of money that expressed in terms of its purchasing power. When the inflation rate growth, there will be decrease of purchasing power of money (Hayes, 2018).

Currently, the degree of social and economic integration of ASEAN members is increasing. Mean for the inflation rates in ASEAN countries were between 0.36 and 16.24 percent in the period 1996-2019. The lowest inflation rates were observed in Brunei Darussalam, Singapore, Malaysia, Thailand, the Philippines and Cambodia with 0.36, 1.44, 2.39, 2.50, 4.37 and 4.86 percent, while the highest were recorded in the Lao People's Democratic Republic and Myanmar were recorded at 16.24 and 16.22 percent, respectively. Inflation rates for Vietnam and Indonesia from 6.15 to 9.38 percent. Meanwhile, ASEAN countries had a rather low per capita real GDP growth rate. Brunei Darussalam recorded the lowest growth rate at 0.62 percent, while Myanmar surpassed the highest growth rate at 8.25 percent. The DPR of Laos, Cambodia and Vietnam were able to reduce the growth rate from 5.18 to 5.45 and 5.65 percent, respectively (see Table 1). Table 1 also shows the preliminary relationships between inflation and growth in the ASEAN countries. Countries such as Singapore, Malaysia, Thailand, the Philippines, and Cambodia recorded moderate growth rates that were accompanied by low long-term inflation.

Table 1: Mean of GDP Growth Rate Per Capita and Mean of Inflation Rate 1996-2019 in ASEAN Countries

<table>
<thead>
<tr>
<th>Mean</th>
<th>GDP growth rate per capita (%)</th>
<th>Inflation rate CPI (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei Darussalam</td>
<td>-0.617</td>
<td>0.362</td>
</tr>
<tr>
<td>Cambodia</td>
<td>5.653</td>
<td>4.859</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3.019</td>
<td>9.380</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>5.184</td>
<td>16.241</td>
</tr>
<tr>
<td>Malaysia</td>
<td>2.962</td>
<td>2.391</td>
</tr>
<tr>
<td>Myanmar</td>
<td>8.251</td>
<td>16.215</td>
</tr>
<tr>
<td>Philippines</td>
<td>3.225</td>
<td>4.374</td>
</tr>
<tr>
<td>Singapore</td>
<td>2.998</td>
<td>1.439</td>
</tr>
<tr>
<td>Thailand</td>
<td>2.635</td>
<td>2.504</td>
</tr>
<tr>
<td>Vietnam</td>
<td>5.449</td>
<td>6.152</td>
</tr>
</tbody>
</table>

Source: Authors Computation

2. Problem Statement

Getting a job nowadays is a difficult task for youth. The global recession has left its impact, and after years of decline, youth unemployment rates are rising again (ILO, 2017). Youth unemployment is a growing issue in ASEAN countries, where it was formerly double or treble the rate of adult unemployment. Given that many ASEAN populations are still young, addressing youth unemployment in the region is critical (O’Higgins, 2010). Thus, the purpose of this study is to examine how youth
unemployment and economic growth interact in ASEAN countries, where the country’s economic policies aim to minimise unemployment while maintaining average growth rates.

3. Objectives of study

The specific objectives of the study are:

i. To examine the relationship between youth unemployment, inflation and economic growth in ASEAN countries.

ii. To investigate the causality effect between youth unemployment, inflation and economic growth in ASEAN countries.

iii. To identify any interaction between economic growth, youth unemployment and inflation among ASEAN countries.

4. Literature Review

The study by Ihensekhien and Ozemnoka (2017) finding that there is the existence of negative relationship between youth unemployment and economic growth in the panel result meanwhile there is positive relationship between these two variables for the individual countries cases of some countries in Sub-Saharan Africa (SSA). Therefore, the policy of mix needs to be application which can lead more investment for the few countries that have positive relationship among the two variables. Somehow, there are changes in employment which were less effect to economic growth in Sweden. Therefore, it causes the high unemployment benefits and other social security also offer supplemental income payments for unemployed people who have little track record in the labour force.

Zainul and Hadi (2020) who’s finding the determinants of youth unemployment rate in ASEAN countries stated that, GDP, Foreign Direct Investment, inflation Openness, Human Development Index and Population aged 0-14 years are the indicators that will affect the youth unemployment. As the result, youth unemployment rate has negative and significant with GDP, FDI and inflation. Meanwhile, Openness, the Human Development Index and population aged 0-14 years have positive and significant effect on youth unemployment. Hence, to decline the youth unemployment in ASEAN, GDP, FDI and inflation must be always on increase condition where to provide more opportunities for young workers especially in small and medium enterprises in the country. Furthermore, ASEAN also need to concern of the human development index which will increase the youth unemployment rate once it in the imbalance in human development index.

Ademola and Badiru (2016), who examine the effects of unemployment and inflation on economic performance in Nigeria, found as a result that there is a long-term relationship with positive relationships between economic growth, unemployment and inflation. These also means the unemployment and inflation delay the expansion of economic in Nigeria since the matter occurred in Nigeria was within the condition of low income per capita, after all the unemployment rate are high. Nevertheless, the expansion of the economic in Nigeria called ‘Exclusive Growth’ which implies it doesn’t reflect the living standard for the typical of citizen of the country. As a conclusion, the government should take the policy that to extend the extent of productivity on others sector of the economy not only focused on the oil sector.

According to Al-Sawaie (2020) whose research of finding the relationship between economic growth and unemployment in Jordan with ARDL approach and causality test. From the research, we can understand that the appearance of unemployment has affect the economic, social, and political motives. Therefore, the lack of investment to develop the economic it makes the fluctuation of economic growth and also the employment. As a result, it was found that there is a negative relationship between unemployment and economic growth in Jordan which indicated that when economic growth increased 1 per cent, then unemployment rate would be decrease 0.26 percent. In other words, if unemployment increases of 1 per cent, it will be expected lead the economic growth decline 3.85 percent in long run.
The causality test also concluded that there is a bidirectional relationship from economic growth (GDP) to unemployment in long term. In contrast, economic growth (GDP) has negative relationship with unemployment in short term. Since low economic growth will lead the unemployment increase, the government need to avoid the companies to cut their workers which will tend to reinforces long term unemployment problems.

4.1 Theoretical Framework

According to Okun (1962), it establishes a relationship between the rate of economic growth (GDP) and the rate of unemployment. This rate is depending to each country economic’s condition, it is due to two important factors that are growth of the labour force and the productive of labour. In general, Okun’s findings demonstrated that when unemployment falls, the production of a country will increase. Similarly, at 3 percent increase in economic growth from its long-run level is associated with at 1 unit decrease in unemployment.

4.2 The Philips curves

There were various theories examines about the linkage between unemployment and inflation. Therefore, the Phillips curve was dividing into four theories which were the negative, the natural hypotheses and, therefore, the positive by the economist Friedman (1976). Keynes maintains his position at the bottom of the Phillips curve and predicts a shift in the Phillips curve’s shape. Since the height of the war, professional analysis of the relationship between inflation and unemployment has gone through two phases, and it is now entering a third phase. The adoption of the Philips hypothesis marked the beginning of the process.

Figure 2: Philips Curve

Philips contests the assumption that there is a stable negative relationship between the growth of unemployment and, consequently, the changes in the wage rate of an individual. Increased unemployment is a result of falling wages, whereas decreased unemployment is a result of increasing wages. When wages changed, the change in costs changed as well, as evidenced by the secular increase in productivity and the treatment of excess price over wage costs being treated as a margin factor that was roughly constant over time.

Figure 2 illustrates this hypothesis, in which Friedman followed the quality practice of relating unemployment to price changes and short-circuiting the intermediate step through wages. The condition of this link was generally explained as policy makers offered a stable compromise on the causal link. You can choose an occasional unemployment target; as Ul to the value of inflation. In the event that they have to accept the theorem of A. The question remains of choosing the measure (monetary tax, perhaps others) that could produce the amount of aggregate nominal demand necessary to achieve the Ul, but if it were fully covered, the combination of unemployment will be ignored and inflation will be preserved.
Alternatively, policy makers could target a coffee rate or perhaps deflation. In this case, they should support higher unemployment \(U_0\), for zero inflation, \(U_H\), for deflation Friedman (1976). Economics then took care of extracting the connection shown in Figure 2.1 from the evidence for different countries and time periods, eliminating the effect of external shocks, showing the connection between changes in prices and wages, etc. Furthermore, they examined the social gains and losses from inflation on the contrary, in order to facilitate the selection of the "correct" compromise. Therefore, Okun's law, which is a diminished version of the Phillips postulate, is used as the model specification in this study. The linear relationship between the GDP growth rate, youth unemployment, and the inflation rate is assumed.

4.3 Conceptual Framework

It is a research framework was developed to illustrate the relationship between independent variables such as youth unemployment, inflation and economic growth as a dependent variable. According to the linkage of theoretical and empirical data, the relationship between youth unemployment, inflation, and economic growth can be discovered by one economist and confirmed by another. It appears that an endogenous model of economic growth would be the most appropriate theoretical framework for this investigation. According to the model, endogenous factors such as youth unemployment and inflation have the potential to have a significant impact on economic growth (see figure 3). It is a widely used growth model that allows for a systematic investigation of government policies and programmes to be carried out by researchers.

Figure 3: Research Framework Among Economic Growth, Youth Unemployment and Inflation

5 Methodology

Firstly, researcher conduct to specify the model of this study. After that the researcher estimate the panel regression model by using Mean group (MG) and Pool mean group (PMG). Then, the diagnostic tests are cross-sectional correlation test, panel unit root tests, cross-section dependence test and panel co-integration tests. Next, Granger causality test applied to investigate the causal relationship between youth unemployment (YU), inflation (INFLA) and economic growth (GDP). Lastly, MANOVA test will be applied to find out the interaction among the 3 variables. In. These methodology plays an important role to implement this study accordingly.

5.1 Model specification

This study used a modified Okun's type model that takes into account unemployment. Inflation is an independent variable, while economic growth is measured by the rate of growth of the Gross Domestic Product (GDP). Okun's law is a diminish version of the Phillips postulate. The GDP growth rate, the unemployment rate, and the inflation rate are assumed to be linearly related. The model for this study is written as follows:

\[
\text{GDP} = f (\text{UNEMPLO}, \text{INFLA}) \quad (1.1)
\]
For this study, we focused on youth unemployment (YU) and the GDP is proxy by purchasing power parity (PPP). Thus, the new imposed model for this study is formulated as follows:

$$\text{GDP} = f (\text{YU}, \text{INFLA})$$  \hspace{1cm} (1.2)

where:
- \(\text{GDP}\) = GDP per capita (%)
- \(\text{YU}\) = Youth Unemployment rate (%)
- \(\text{INFLA}\) = Inflation rate (%)

Since this study will run for 10 ASEAN countries \((N)\) and number of observations is 24 years \((T)\), where the \(N < T\), the heterogeneous dynamic panel data will be employed. In other words, this study will be employed panel Autoregressive Distributed Lag (ARDL), and thus the model can be written as follows:

$$\text{GDP}_{it} = \alpha + \beta_1 YU_{it} + \beta_2 \text{INFLA}_{it} + \mu_{it}$$  \hspace{1cm} (1.3)

where:
- \(\text{GDP}_{it}\) = GDP per capita at country \(i\) over the period of \(t\)
- \(YU_{it}\) = Youth unemployment rate at country \(i\) over period of \(t\)
- \(\text{INFLA}_{it}\) = Inflation rate country \(i\) over period of \(t\)
- \(\alpha\) = constant
- \(\beta\) = coefficient
- \(\mu\) = error term

5.2 Data and variable

This study uses secondary time series data from year 1996 to 2019 from 10 ASEAN countries. The selected ASEAN countries were chosen which are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Myanmar, Malaysia, Philippines, Singapore, Thailand and Vietnam. The data used in this study is annual data and aggregated data, which taken from World Bank database. The data taken for longer period to ensure the time periods are comparable and required to achieve a good base. There will be a total of 240 numbers of observations in this study.

5.3 Descriptive analysis

The basic features of the data in the investigation are described using descriptive analysis. When doing descriptive analysis, we simply describe what the data is or indicates. The short summaries of the sample and observations that have been incorporated into the research are shown in descriptive analysis. Descriptive statistics are a type of measurement that gathers two different types of data: location and variability. The arithmetic mean is the most frequent method of measurement, and location or the central tendency measurement which to indicate a variable of its central value. Variability, such as variance and standard deviation, was applied to spread the data out from the center. The standard deviation of a series is a measure of its spread or dispersion. The Skewness assesses the lack of symmetry in data distribution, according to Roser et. al (2019). It distinguishes between extreme values in one tail and the other. Kurtosis is a measure of the number of outliers in a distribution.

5.4 Estimation procedure

When the data set contains both time series and cross-sectional studies, the panel estimation technique is the most appropriate tool. Even panel estimation allows more flexibility (Green, 2010) and improves the results’ power due to the bigger sample size (Hondroyiannis, 2010), panel data still have to deal with autocorrelation (time series) and heterogeneity (cross sectional) problems. Endogeneity problem also arise and lead to biased and inconsistent estimators if using fixed effects and random effects models (Bun & Sarafidis, 2015). Since this study is a micro panel data i.e. \(N = 10\) countries with \(T = 24\), the Lagrange Multiplier (LM) test is applicable (Baltagi, Kao, & Peng, 2016).
Therefore, the analysis begins with the panel unit root test, where the total of time periods is more than he cross sections number to determine the stationary properties of the relevant variables. After determining the order, the integration of each of the variables of the time series, and if the variables are, results as integrations of different orders, when the existence of both level $I(0)$ and first difference $I(1)$, but strictly speaking not $I(2)$, the Autoregressive Distributed Lag (ARDL) panel test is used to test the cointegration or long-term relationship among the variables of the model.

5.5 Panel Unit-Root Test

By implementing panel data, it is possible to prevent the presence of spurious regression. The estimation of panel data spurious regression yields a consistent estimate of the true value of the parameter when using panel data. Even though panels are more representative than individual time series, unit root tests based on panels have higher power than unit root tests based on individual time series. The panel unit root tests are similar with time series unit root test but not identical (Baltagi, Kao, & Peng, 2005).

The panel unit root with heterogeneous dynamics, fixed effects, and an individual specific determinant trend was first studied by Levin, Lin, and Chu (2002) or LLC. In the alternative, they assumed the presence of a homogenous autoregressive root. Im, Pesaran, and Shin (2003), often known as IPS, presented the between-group panel unit root tests, which allow for heterogeneity of the autoregressive root in the alternative. As a result, Choi (2001) and Maddala and Wu (1999) proposed employing a Fisher statistic to do the same sorts of panel unit root tests.

In all unit root tests, the null is the presence of a unit root in a sequence of tests. Nevertheless, in the tests provided by LLC, the term "stationary" is used as a confusing alternative. Furthermore, in the IPS test, as well as the Fisher-ADF and Fisher-PP tests, there are some cross sections that do not have a unit root at all. In light of this, we ran the LLC tests under the assumption of a single common unit root process. Meanwhile, using the ADF and PP tests, it was discovered that the assumptions of each unit root processes in the IPS test were consistent with the Fisher-type tests applying the test of ADF and PP. The unit root test on a panel is comparable but it does not mean can indistinguishable on a single series unit root test since it is performed using a single series. This is accomplished by categorising the results of our unit root test according to whether or not the existence or limitation for the series or cross-sections by the autoregressive (AR) process. For panel data, we consider the following AR (1) technique to be appropriate:

$$y_{it} = \rho_i y_{it-1} + X_{it} \delta_i + \epsilon_{it} \quad (1.4)$$

where:

- $i = 1, 2...N$ units of cross-section, observation of the periods
- $t = 1, 2...T$
- $X_{it} =$ exogenous variables, including fixed effects or individual trends
- $\rho_i =$ coefficients of autoregressive
- $\epsilon_{it} =$ idiosyncratic disturbance

If, $|\rho_i| < 1$ $Y_i$ is said to be weakly (trend) stationary. On the other hand, if $|\rho_i| = 1$ then $y_i$ contains a unit root. The LLC tests suspect that the unit root process is the same across allcross-sections, and that $\rho_i$ is the same across all cross-sections. The LLC test suggest a more powerful panel unit root test than performing individual unit root tests for each cross-section (Baltagi et al., 2005). For example, the LLC test consider the basic ADF specification:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{\rho_i} \beta_{ij} \Delta y_{it-j} + X_{it} \delta_i + \epsilon_{it} \quad (1.5)$$

where:
\( \alpha = 1 - \rho \) the lag order for the difference terms should be recognised.

\( \rho_i \) = vary across cross-sections 

Therefore,

\( H_0: \alpha = 0 \) (There is unit root/non-stationary)

\( H_1: \alpha < 0 \) (There is no unit root)

Meanwhile, the IPS allow for individual unit root processes so that \( \rho_i \) vary across cross-sections. In this test, we will combine all the individual unit root tests are performed in order to produce a panel-specific result. For example, the IPS tests also beginning with each cross section, specify a separate ADF regression using the following syntax:

\[
\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{\rho_i} \beta_j \Delta y_{it-j} + X_{it}' \delta + \varepsilon_{it}
\]

The null hypothesis for IPS is:

\( H_0: \alpha_i = 0 \), for all \( i \)

\( H_1: \alpha_i = 0 \) for \( i = 1, 2, 3, 4, \ldots, N \)

\( H_1: \alpha_i < 0 \) for \( i = N + 1, N + 2, \ldots, N \)

Hence, in this research the researcher will apply the panel root test to run and get the result to investigate the unit root for each individually (10 ASEAN countries). Then IPS unit root test will be employed to investigate for the panel unit root test.

### 5.6 Panel Co-integration

There has been an increased strong emphasis on the implementation of various statistical tests to panels of data, owing to the increased great interest in and availability of panel data. The study of co-integration in a panel context has attracted attention recently. Fisher-type test, Kao (1999) and Pedroni (1999, 2004) with fundamental approach of Johansen are the sorts of panel co-integration tests we apply (Maddala & Wu, 1999). The Engle and Granger (1987) two-step (residual-based) co-integration test is the basis for the Pedroni and Kao test. The Fisher test is a combination of the Johansen and the Fisher tests.

The co-integration test developed by Engle and Granger (1987) is based on an evaluation of the residuals of a spurious regression by using integrated of order (I)(1) variables. The residuals will be I if the variables are co-integrated (0). The residuals, on the other hand, will be I if the variables are not co-integrated (1). The Engle–Granger framework is extended to panel data testing by Kao (1999) and Pedroni (1999, 2004). Pedroni presents a number of co-integration tests that allow for different intercepts and trend coefficients across cross-sections. The Kao (1999) test uses the same fundamental approach as the Pedroni tests, but the first-stage regressors have cross-section-specific intercepts and homogenous coefficients. The regression considers as:

\[
y_{it} = \alpha_{it} + \chi_{it} \beta + u_{it}
\]

where:

\( \alpha_{it} \) = individual constant terms

\( \beta \) = slope parameter

Kao proposes an ADF statistic. The DF statistic, which allows for endogeneity. The Augmented-Dickey-Fuller (ADF) type test can be calculated from:

\[
u_{it} = \rho u_{it-1} + \sum_{j=1}^{\rho} \psi_j \Delta u_{it-j} + e_{it}
\]

where \( \rho \) is chosen so that the residuals \( e_{it} \) are serially uncorrelated. The ADF test statistic is the usual t-statistic with \( \rho = 1 \) in the ADF equation.
Pedroni (2000, 2004) suggested that the test of several for panel data model in cointegration allows the consideration of heterogeneity. The benefit of Pedroni tests are the fact they allow for multiple regressor. The cointegration vector to vary across the different in panel sections, and also for heterogeneity in the errors across cross-sectional units. The panel regression model suggested by Pedroni as:

\[ Y_{it} = a_i + \delta_i + \sum_{m=1}^{M} \beta_{mi} X_{mi,t} + u_{it} \] (1.9)

where \( t=1,2,\ldots,T \) and \( n=1,2,\ldots,N; m=1,2,\ldots,M; Y \) and \( X \)'s are assumed to be integrated of order one, e.g. \( I(1) \). The individual \( (a_i) \) and trend effect \( \delta_i \) if desired, it maybe set zero. Nevertheless, the general approach is to obtained residuals from long-run regression and test whether residuals are \( I(1) \) by running the auxiliary regression as:

\[ u_{it} = p_i u_{it-1} + \sum_{j=1}^{p_i} \psi_{ij} \Delta u_{it-j} + \epsilon_{it} \] (1.10)

### 5.7 Pooled mean group estimator

As it contains two pooling and averaging methods, the Pooled Mean Group (PMG) estimator is an intermediate approach. The PMG approach, unlike the MG estimator, typically limits the long-coefficient become homogeneous across individual countries, similar to the dynamic fixed effects estimator. PMG. On the other hand, since it allows for changes in the intercept, short run coefficients, and error variances, the MG estimator is a powerful and flexible estimator. The long-slope coefficient is restricted to being the same across all countries, but the short-coefficients, such as adjustment speed and regression intercept, are allowed to be country specific. Due to the ensure the adequacy for this study data collection, panel ARDL model is applied. First, unlike this study, it can allow a mixture of stationarity of variables such as \( I(0) \) rather than \( I(1) \). It's also appropriate for investigations with a modest number of participants. This study has 10 cross sections and 24 years, which is a modest sample size for most panel studies but can be accommodated in panel ARDL models. Finally, it captures the short- and long-term changes of the variable of interest. As a result, both PMG and MG estimations are performed in this study. In the panel ARDL form of Pesaran and Smith (1999), Eq. (1.3) can be expressed as:

\[
\Delta GDP_{it} = A + \phi GDP_{it-1} + \alpha_i \sum_{\tau=1}^{\rho} \Delta GDP_{i\tau-1} + \pi_i \sum_{\tau=1}^{\rho} \Delta YU_{it-1} + \omega_i \sum_{\tau=1}^{\rho} \Delta INFLA_{i\tau-1} + \lambda_i \sum_{\tau=1}^{\rho} \Delta YU_{INFLA_{i\tau-1}} + \beta_1 GDP_{it-1} + \beta_2 YU_{it-1} + \beta_3 INFLA_{it-1} + \beta_4 YU_{INFLA_{it-1}} + \eta_i + \epsilon_{it} \] (1.11)

Where \( \phi \) is the coefficient of the past lagged value of the dependent variable, \( \alpha_i, \pi_i, \omega_i, \) and \( \lambda_i \) are the short run coefficients while \( \beta_1 \) to \( \beta_4 \) indicate the long run coefficients with \( YU_{INFLA_{i\tau-1}} \) and \( YU_{INFLA_{it-1}} \) being the short run and the long run interactive effects of remittances and financial development. The MG estimator, on the other hand, can be phrased as Pesaran and Shin (1995) suggest:

\[ MG = N^{-1} \sum_{i=1}^{N} \hat{\beta}_i \] (1.12)

In Equation (1.12), MG and \( \hat{\beta}_1 \) denote mean group and coefficient estimates, respectively. After the estimation of the MG and PMG models, the Hausman test is used to determine the homogeneity of long run coefficients in order to find the best model. To provide full and accurate estimates, multiple analysis is used in conjunction with other techniques to overcome econometric problems such as heterogeneity, non-stationarity, dynamics and endogenousness. There is a strong argument that the correlations between variables are homogeneous, especially over extended periods of time, which supports the accuracy of the PMG estimator in this case.

### 5.8 Panel Granger-Causality Test

Panel Granger causality is used to assess the importance of a given item and the amount of information it contains, as demonstrated by the term’s common usage. Using the Granger (1969) method to the
condition of whether will causes y, one can determine how much the recent y can be explained by the values of y that occurred in the past. Then, to find out the explanation of adding lagged values of x can be improved. As an example, when the coefficients on the lagged x's are statistically significant, the variable y is said to be Granger-caused by the variable x. When there is equal, the variable y is said to be Granger-caused by the variable x. It is important to note that two-way causation is frequently observed; x Granger causes y and y Granger causes x. It is important to note that the statement "x Granger causes y" does not imply that the result of x or the affection is the same as the cause. In the case of bivariate regressions, the form:

\[ Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \cdots + \alpha_l Y_{t-l} + \beta_1 X_{t-1} + \cdots + \beta_l X_{t-l} + \epsilon_t \]  
(1.13)

\[ X_t = \alpha_0 + \alpha_1 X_{t-1} + \cdots + \alpha_l X_{t-l} + \beta_1 Y_{t-1} + \cdots + \beta_l Y_{t-l} + \epsilon_t \]  
(1.14)

to identify all of the possible pairs of (x, y) series in the group. The Wald statistics for joint hypotheses are the F-statistics that are reported as follows:

\[ \beta_1 = \beta_2 = \cdots = \beta_l = 0 \]  
(1.15)

The null hypothesis is that does GDP not Granger-cause YU in the first regression and that does YU not Granger-cause GDP in the second regression. The second null hypothesis is that does GDP not Granger-cause INFLA in the first regression and that does INFLA not Granger-cause GDP in the second regression. The third null hypothesis is that does YU not Granger-cause INFLA in the first regression and that does INFLA not Granger-cause YU in the second regression.

5.9 Multivariate Analysis of Variance (MANOVA)

MANOVA test also called multivariate analysis of variance applied as an extension of univariate analysis of variance (ANOVA), in which the independent variable has some combination of group membership, but there is more than one dependent variable, as opposed to univariate analysis of variance (ANOVA). The researcher uses MANOVA to discover the correlation dependent variables, or instead of a repeated-measures ANOVA, to circumvent the sphericity assumption in the ANOVA. MANOVA can be used to assess numerous dependent variables at the same time in a single, more powerful test.

Canonical correlation, which is a specific case of MANOVA, and discriminant function analysis, which are both intimately related to each other (DFA). The assumption of DFA is they assume the group membership is based on the measurement of multiple interval which can be applied after MANOVA to interpret the results. MANOVA is a tool that to review and underlying theory of univariate ANOVA and also as well as demonstrating how it extends ANOVA by two dependent variables. MANOVA recruits two or more dependent variables compare the ANOVA only have one dependent variable (Stockburger, 2018). Hence, null hypothesis as below:

\[ H_0: \text{The variable or the interaction of the corresponding has no significant effect on the dependent variables / ASEAN countries} \]

\[ H_1: \text{The variable or the interaction of the corresponding has a significant effect on the dependent variables / ASEAN countries} \]

As mentioned above, MANOVA is extends of ANOVA. Therefore, to determine the variance of the S matrices are found. Wilks’ \( \lambda \) is the test statistic preferred for MANOVA, and is found through a ratio of the determinants:

\[ \Lambda = \frac{|S_{error}|}{|S_{effect} + S_{error}|} \]  
(1.16)
F estimation can be specified through the following equations:

\[ F_{\text{approx}}(df_1, df_2) = \frac{(1-y)}{y} \left( \frac{df_2}{df_1} \right) \]

where,

\[ df_1 = p(df_{\text{effect}}) \]
\[ df_2 = s((df_{\text{error}}) - \frac{p - df_{\text{effect}} + 1}{2} - \frac{p(df_{\text{effect}}) - 2}{2}) \]
\[ s = \sqrt{\frac{p^2(df_{\text{effect}})^2 - 4}{p^2 + (df_{\text{effect}})^2 - 5}} \]
\[ y = \Lambda^{1/2} \]
\[ p = \text{No. of DVs} \]
\[ df_{\text{effect}} = (IV_1 - 1)(IV_2 - 1) \ldots (IV_n - 1) \]
\[ df_{\text{error}} = n_{L1} \cdot n_{L2} (n_{DV} - 1) \]

Lastly, we need to determine the strength of the association. Due to the fact that Wilks' is equal to the variance not accounted for by the combined Dependent Variables, the variance accounted for by the optimal linear combination of Dependent Variables is equal to \((1 - \lambda)\).

\[ n^2 = 1 - \Lambda \]  

(1.18)

However, so it is calculated as the sum of all Dependent Variables, it can be more than one and consequently less useful than the following formula:

\[ n^2 = 1 - A^{1/5} \]

(1.19)

Wilks'\(\lambda\) is the pooled ratio of error variances to the sum of effect variance and error variance plus the sum of error variance. Although this is the most frequently reported test statistic, it is not necessarily the best choice. This function returns an exact F-statistic.

Statistically, the Hotelling's trace is defined as the pooled ratio of effect variance to error variance:

\[ T = \sum_{i=1}^{s} \lambda_i \]

(1.20)

The Pillai-Bartlett criterion is equal to the sum of the pooled effect variances. The most robust and powerful test statistic is frequently believed to be the chi square test statistic. It is the case provides the most cautious F-statistic possible

\[ V = \sum_{i=1}^{s} \frac{\lambda_i}{1 + \lambda_i} \]

(1.21)

Finally, Roy's Largest Root, which refers to the eigenvalue with the greatest magnitude. Additionally, it disregards the F-statistic if none of the other test statistics are significant, resulting in an upper bound for the F-statistic. As a result, when there are moderate correlations between dependent variables, MANOVA can produce a suitable result in the consequence (French, Macedo, Poulsen, J., Waterson, & Yu, 2008).

6 Empirical Result

6.1 Descriptive statistics

Due to this research had a large of amounts of data, descriptive statistics is important to help find out the simplify large amounts of data in a sensible way. Summary statistics for the Gross Domestic
Product, Youth Unemployment, and INFLA are shown in Table 2. As refer to Table 2, the measures of central tendency for the variables all show a positive direction. Standard deviation reflects how far the sample mean is from the 'actual' population mean in terms of standard error. It rises in proportion to the increase in variation, and falls in proportion to the increase in sample size. It offers a measure of ambiguity in the data. GDP, YU, and INFLA all have standard deviations of 3.651, 7.878, and 12.554 correspondingly, while GDP is the most volatile.

Table 2: Descriptive Statistics of the Variables ASEAN Countries

<table>
<thead>
<tr>
<th>Category</th>
<th>GDP</th>
<th>YU</th>
<th>INFLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.876</td>
<td>10.647</td>
<td>6.392</td>
</tr>
<tr>
<td>Median</td>
<td>4.358</td>
<td>9.281</td>
<td>3.406</td>
</tr>
<tr>
<td>Maximum</td>
<td>12.788</td>
<td>36.657</td>
<td>125.272</td>
</tr>
<tr>
<td>Minimum</td>
<td>-14.351</td>
<td>1.357</td>
<td>-2.315</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>3.651</td>
<td>7.878</td>
<td>12.554</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.916</td>
<td>0.861</td>
<td>5.815</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>6.522</td>
<td>3.031</td>
<td>45.980</td>
</tr>
</tbody>
</table>

Source: Authors Computation

As the result for skewness, since there result for GDP shows the values in negative such as -0.916 skewed negatively with left-hand tail. But YU and inflation shows the values in positive as 0.861, 5.815 where there is positively skewed, and the right-hand tail will be longer than the left-hand tail. Moreover, the Kurtosis result also shows that the value of GDP, YU and INFLA are more than 3 as 6.522, 3.031 and 45.980 where it is less variability where it’s called Leptokurtic with the peaks sharply with tails. The distribution is longer, tails are fatter. Peak is higher and sharper than Mesokurtic, which means that data are heavy-tailed or profusion of outliers.

6.2 Mean Group and Pooled Mean Group: Hausman Test Results

In this section, both PMG and MG estimators will be applied. The optimal lag length of panel ARDL (4,4,4) is chosen for both the PMG and MG estimations following the Schwarz information criterion (SIC). The validity of the long-run homogeneity restriction cross countries and the efficiency of the PMG estimator over the MG estimator were then examined by Hausman test. In this test, the null hypothesis is that the difference between PMG and MG is not significant. If we cannot reject the null hypothesis, the PMG estimator is efficient.

Table 3: Mean Group and Pooled Mean Group: Hausman Test with ARDL (4,4,4) Results

<table>
<thead>
<tr>
<th>GDP (Dependent Variable)</th>
<th>Pooled Mean Group (PMG)</th>
<th>Mean Group (MG)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long Run</td>
<td>Short run</td>
</tr>
<tr>
<td>EC</td>
<td>0.226***</td>
<td>(0.000)</td>
</tr>
<tr>
<td>∆ YU</td>
<td>0.041</td>
<td>(0.852)</td>
</tr>
<tr>
<td>∆ INFLA</td>
<td>-0.073***</td>
<td>(0.012)</td>
</tr>
<tr>
<td>YU</td>
<td>-0.246***</td>
<td>(0.000)</td>
</tr>
<tr>
<td>INFLA</td>
<td>0.311***</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.177***</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Observation</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Hausman Test</td>
<td>0.56</td>
<td>(0.756)</td>
</tr>
</tbody>
</table>
The results revealed that according to PMG estimator, in long run youth unemployment (YU) has a significant negative impact where the increase in 1 percent of youth unemployment, it will decrease 0.24 percent of economic growth which is in line with the findings by (Evanezza & Caroline, 2020). Somehow, there is no impact in the short run on economic growth (GDP) meanwhile the MG estimator shows there also negative but insignificant coefficient for both long run in short run. For inflation (INFLA), the result stated that INFLA also has positive significant impact in the long run which means that the increase of 1 percent of inflation, it also improves the economic growth with 0.31 percent. But there is negative significant in short run on economic growth (GDP) according to PMG estimator, whereas the MG estimator indicated that it has no impact on economic growth in long run but positive significant impact in short run. For the result speed adjustment (EC), the result indicated that, there is short run impact for both PMG and MG estimator which is positive significant. Therefore, the Hausman test accepted the null hypothesis which revealed that PMG was more accurate and efficiency estimator than MG model after comparing for both estimators. We can clearly find that the PMG estimator is more favorable than MG estimator.

6.3 Robustness analysis

In this section Robustness analysis will be applied to find the valid causal inference and the coefficients of the model (White et al., 2010). Generally, it is important to have a robustness test especially the sensitive analysis to avoid the appearance of “fragility” of regression coefficient estimates is inactive of specification error in research (Leamer, 1983). Hence, the comparison between Pooled Mean Group (PMG) estimator Dynamic Fixed Effect (DFE) estimator will be applied to define the strongness of the model.

<table>
<thead>
<tr>
<th>Table 4: Robustness Analysis Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (Dependent Variable)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>EC</td>
</tr>
<tr>
<td>Δ YU</td>
</tr>
<tr>
<td>Δ INFLA</td>
</tr>
<tr>
<td>YU</td>
</tr>
<tr>
<td>INFLA</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Observation</td>
</tr>
</tbody>
</table>

**Note:** *** Significance at 1 per cent
Source: Authors Computation

According to table 4, the result is comparing PMG and DFE model which to affirm the robust analysis. The results revealed that according to PMG estimator, youth unemployment (YU) has a
negative significant impact in the long run and no impact in the short run-on economic growth (GDP) meanwhile the DFE estimator shows there has no impact on economic growth in long run but have negative with significant impact in the short run. For inflation (INFLA), the result stated that INFLA also has positive significant impact in the long run and but negative impact significant in short run-on economic growth (GDP). Hence, the result revealed that the DFE model has no significant impact of inflation (INFLA) on economic growth (GDP) in both long run and short run. For EC, the result indicated that, there is short run impact for both PMG and DFE model, which is negative significant. Therefore, it is sufficient that the constraint of homogeneity across the countries in long run and the validity of PMG estimator through the others two estimators as MG and DFE. As a conclusion, the comparing between PMG and DEF, it is like an expected the PMG estimator is favorable over DFE mode. As a result, there is affirm of in long-term there is existed of causal relationship between economic growth (GDP), youth unemployment (YU), and inflation (INFLA).

6.4 Correlation matrix

In this section, diagnostic test is cross-sectional correlation test, panel unit root test, cross-section dependence test and panel cointegration. The implementation of these test will help to determine the model and how to estimate it. Correlation analysis will proceed to determine the direction and strength between the variables. In addition, the analysis also indicates how the data are correlated with measurement of multicollinearity. From table 5 method of correlation test to test multicollinearity that how the data is free from high multicollinearity of the variables between economic growth (GDP), youth unemployment (YU) and inflation (INFLA) in ASEAN countries.

| Table 5: Correlation Matrix Result for ASEAN Countries |
|----------------|----------------|----------------|
|                | GDP            | YU             | INFLA          |
| GDP            | 1.000          |                |                |
| YU             | -0.285         | 1.000          |                |
| INFLA          | 0.083          | -0.188         | 1.000          |

Based on the result shown in table 5, It shows that the variables of economic growth (GDP), youth unemployment (YU), and inflation (INFLA) in ASEAN countries have a linear relationship. As the result indicated that all variables below the threshold value of multicollinearity which is to be 80 percent or anything below 90 percent and also not nearly only dependent on one another. Therefore, no multicollinearity existed in this model and no variable is needed to be excluded. Hence, the estimators still remain unbiased, efficient and consistent. Hence, it can be concluded that the problem of multicollinearity is not exist in the model.

6.5 Panel Unit Root Test

Before proceed to panel unit root test, cross-section dependency test be applied due to $T>N$ by Breusch Pagan test in order to find out the suitable type of panel unit root test and to determine the level of cointegration in the research.

| Table 6 Cross-Section Dependence Test Result |
|----------------|----------------|----------------|
| Test            | Statistic      | $P$-value      |
| Breusch-Pagan LM| 211.132        | 0.000          |
| Pesaran scaled LM| 17.512        | 0.000          |
| Pesaran CD      | 12.211         | 0.000          |

Source: Authors Computation
Table 6 revealed that we can reject the null hypothesis of no cross-section dependence in where it is significance at 1 percent of p-value. As a result, we can conclude that there is existence of cross-section dependency and Pesaran (2007) test was used for the panel unit root test.

After that, the analysis will proceed with the IPS panel unit root test, because the number of time periods is more than the number of cross sections, allowing for the determination of the stationary qualities of the necessary variables to be completed. The estimation of panel data spurious regression yields a consistent estimate of the true value of the parameter when using panel data. The unit root tests based on panels have more significant than the unit root tests based on individual time series since they are more representative.

**Table 7. Panel Unit Root Test Results**

<table>
<thead>
<tr>
<th>Variables</th>
<th>At Levels</th>
<th>At First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intercept</td>
<td>Intercept &amp; Trend</td>
</tr>
<tr>
<td>GDP</td>
<td>-5.862***</td>
<td>-5.983***</td>
</tr>
<tr>
<td>YU</td>
<td>0.104</td>
<td>-1.005</td>
</tr>
<tr>
<td>INFLA</td>
<td>-4.717***</td>
<td>-5.470***</td>
</tr>
</tbody>
</table>

Note: ***Significance at 1 per cent
Source: Authors Computation

The IPS panel unit root tests result present in Table 7. The IPS test result stated that all variables of the model are found to be stationary at first difference of significance of 1 percent. Then, we can reject the null hypothesis of stationarity non-existence. The GDP, YU and INFLA are found to be integrated $I(1)$. At this moment, the results of IPS panel unit root test are more favorable according to cross-section dependency test. Therefore, as all the variables are stationary at mixed level, as for next step, panel cointegration analysis will be carried out in order to determine whether there is a long-term correlation between youth unemployment, inflation, and economic growth in the ASEAN countries.

**6.6 Panel Co-integration Test**

To proceed the panel co-integration test between GDP, YU and INFLA. In this co-integration test, panel test by using Kao (1999), Pedroni (1999), and Westerlund procedures which contribution of GDP to YU and INFLA in the long-run.

**Table 8: Panel Co-integration Test Results**

<table>
<thead>
<tr>
<th></th>
<th>Kao Test</th>
<th>Pedroni Test</th>
<th>Westerlund Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified Dickey-Fuller t</td>
<td>-0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dickey-Fuller t</td>
<td>-2.035***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Augmented Dickey-Fuller t</td>
<td>-2.3835***</td>
<td>-6.197***</td>
<td></td>
</tr>
<tr>
<td>Unadjusted modified Dickey-Fuller t</td>
<td>-14.360***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unadjusted Dickey-Fuller t</td>
<td>-9.203***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modified Phillips-Perron t</td>
<td>-2.406***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phillips-Perron t</td>
<td>-6.614***</td>
<td></td>
<td>-2.218***</td>
</tr>
</tbody>
</table>

Note: ***denotes 1% significant level.
Source: Authors Computation

Table 8 presents the result of panel co-integration test. The results show that the three variables are co-integrated. So, it can be clearly confirming that the panel cointegration test showed there is a long-run relationship between GDP, YU, and INFLA in ASEAN countries. The findings also revealed that the most of the statistics at the 1percent significance level reject the null hypothesis of no co-integration. Therefore, this is in agreement with similar study of unemployment and inflation on
economic growth in Nigeria that conducted by Ademola and Badiru (2016). Thus, it is evident that the model of GDP, YU and INFLA move together in the long-run.

6.7 Panel Granger Causality Results

In this section, panel Granger causality test will be applied to answer the second objective of this study to find out how much the economic growth can be explained by the values of Youth Unemployment (YU) and Inflation (INFLA) in ASEAN countries individually.

<table>
<thead>
<tr>
<th>Table 9 Panel Granger Causality Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP→YU</td>
</tr>
<tr>
<td>Panel</td>
</tr>
<tr>
<td>8.263***</td>
</tr>
<tr>
<td>YU→GDP</td>
</tr>
<tr>
<td>7.714***</td>
</tr>
<tr>
<td>GDP→INFLA</td>
</tr>
<tr>
<td>4.655***</td>
</tr>
<tr>
<td>INFLA→GDP</td>
</tr>
<tr>
<td>3.717***</td>
</tr>
<tr>
<td>YU→INLFA</td>
</tr>
<tr>
<td>0.822</td>
</tr>
<tr>
<td>INLFA→YU</td>
</tr>
<tr>
<td>1.571</td>
</tr>
</tbody>
</table>

Note: *** Significance at 1 per cent
Source: Authors Computation

Based on table 9, the result indicates that economic growth (GDP) has granger causality with both youth unemployment (YU) and inflation (INFLA) with the significance result and reject the null hypothesis at 1 per cent respectively. Moreover, for ASEAN countries as a group, the result indicated that economic growth (GDP) with both youth unemployment (YU) and inflation (INFLA) have bidirectional causality which is GDP granger causality youth unemployment (YU) and inflation (INFLA) with the result of significance at 1 percent and youth unemployment (YU) and inflation (INFLA) also can granger causality economic growth (GDP) with the result of significance at 1 percent. Therefore, the bidirectional relationship between youth unemployment (YU), inflation (INFLA) and economic growth (GDP) exists with causality running from youth unemployment (YU) and inflation (INFLA) to economic growth (GDP) in ASEAN countries.

6.8 Multivariate Analysis of Variance (MANOVA)

Lastly, Multivariate Analysis (MANOVA) applied in this section which to try to answer the third objective that identify any interaction between youth unemployment (YU), inflation (INFLA) and economic growth in ASEAN countries.

<table>
<thead>
<tr>
<th>Table 10: MANOVA Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU + INFLA (Dependent variables)</td>
</tr>
<tr>
<td>Test</td>
</tr>
<tr>
<td>Wilks’s test</td>
</tr>
<tr>
<td>Hotelling-Lawley's test</td>
</tr>
<tr>
<td>Pillai’s test</td>
</tr>
<tr>
<td>GDP+ YU (Dependent variables)</td>
</tr>
<tr>
<td>Wilks’s test</td>
</tr>
<tr>
<td>Hotelling-Lawley's test</td>
</tr>
<tr>
<td>Pillai’s test</td>
</tr>
<tr>
<td>Roy’s test</td>
</tr>
<tr>
<td>GDP+ INFLA (Dependent variables)</td>
</tr>
<tr>
<td>Wilks’s test</td>
</tr>
<tr>
<td>Hotelling-Lawley's test</td>
</tr>
<tr>
<td>Pillai’s test</td>
</tr>
<tr>
<td>Roy’s test</td>
</tr>
</tbody>
</table>

Source: Authors Computation
Wilks’ Test, Hotelling-Lawley's test, Pillai’s test and Roy’s test were applied in the MANOVA test. According to MANOVA, as the computed p-value is lower than the significance level alpha=0.05, one can reject the null hypothesis which means the variable is interaction of the corresponding has a significant effect on the dependent variables. As the result, table 10 shows that the Youth Unemployment (YU) and inflation (INFLA) scores below 0.05 significant. In addition, the economic growth and Youth Unemployment is significant effect on the inflation (INLFA) where the p-value is below 0.5 percent (0.036). Lastly the result also shows that economic growth (GDP) and inflation (INFLA) has insignificant effect on youth unemployment (YU) with p-value is (0.870) where the computed p-value is higher than the significance level alpha=0.05, one we cannot reject the null hypothesis. As conclusion, this indicate the youth unemployment and Inflation indeed influence by the economic growth which stated that economic growth has interaction with both youth unemployment and inflation directly with the significant result and also when economic growth with youth unemployment there is existence of the interaction with inflation in ASEAN countries.

6.9 Discussion of the Results

This research discusses the introduction, explain the empirical findings of the relationship among youth unemployment, inflation and economic growth in ASEAN. Firstly, we conduct to specify the model of this study. Next, the study proceeds to the descriptive analysis of the data. After that, the result of the model of GDP, YU and INFLA are significant with the existing of long-run relationship as a group for ASEAN countries. Then, there is no panel error correction in panel ARDL model with PMG estimator is more favorable. The results revealed that according to PMG estimator, in long run youth unemployment (YU) has a significant in negative impact where the increase in 1 percent of youth unemployment, it will decrease 0.24 percent of economic growth. For inflation, the result stated that inflation (INFLA) also has positive significant impact in the long run which means that the increase 1 percent in inflation, it also improves the economic growth with 0.31 percent and in short run the inflation revealed that there is negative relationship where increase of 1 percent in inflation, it will decrease 0.073 unit in economic growth. Hence, these result that can fulfill to answer the first objective that examine the relationship between youth unemployment, inflation and economic growth in ASEAN countries. Then, the diagnostic tests are Correlation Matrix test, cross-sectional correlation test, panel unit root tests, cross-section dependence test and panel co-integration tests. The correlation analysis applied to find out there is not existed of multicollinearity problem in the model. The implementation of theses test will help us to determine the model and how to estimate it. Next, the result also found out that the model passed adequate test with no parameter and error variance instability which can conclude that it is satisfied for the model dan data observation.

The second finding is to investigate the causality effect between youth unemployment, inflation and economic growth in ASEAN countries. The results indicate that that economic growth (GDP) has granger causality with both youth unemployment (YU) and inflation (INFLA) with the significance result and reject the null hypothesis at 1 percent level. Hence, the bidirectional causality relationship existed between the 3 variables in ASEAN countries.

Lastly, multivariate analysis has been applied to identify any interaction between economic growth, youth unemployment and inflation in ASEAN countries. The result stated that the youth unemployment and inflation indeed influence by the economic growth which stated that economic growth has interaction with both youth unemployment and inflation directly with the significant result and also when economic growth with youth unemployment there is existence of the interaction with inflation in ASEAN countries. In contrast, the result also shows that economic growth and inflation has insignificant effect on youth unemployment which means there is no interaction when economic growth and inflation does not influence by youth unemployment. The three objectives of the study have been found in this study and the summarise of the main findings and policy implication will be discussed next part.
7 Conclusion

In this research, with analyzing the relationship between youth unemployment, inflation and economic growth in ASEAN countries, these findings have provided certain important policy and economic implications. At beginning, the study examines the impact of youth unemployment and inflation on economic growth in ASEAN countries. Secondly, there is the existence of bidirectional relationship between youth unemployment, inflation and economic growth with causality running from youth unemployment and inflation to economic growth in individual. Thus, youth department policies must take the changes that are influenced by relevant information as a result where the three variables have a long-term relationship and the result is substantial. Lastly, there also a finding that youth unemployment (YU) and inflation (INFLA) has interaction of significant effect on economic growth (GDP). Hence, some policy must be implemented to aid in the enhancement of youth empowerment policies as well as the creation of young employment. As a policy implication, policymakers should enhance output in ASEAN countries by enhancing productivity or supply in order to reduce unemployment and increase the prices of goods and services (inflation), boost economic growth, and offer rational wage range. In addition, the government must widen participation of youth in workforce and create more jobs in order to reduce youth unemployment and inflation, as well as improve domestic output (GDP) in ASEAN countries.

REFERENCES


EMPIRICAL INVESTIGATION OF TWIN DEFICIT HYPOTHESIS: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Purpose: The controversial empirical findings of the causality relationship between the budget deficit and the current account deficit continuously creating debate among empirical researchers, known as the Twin Deficit Hypothesis. The study aims to conceptualize the twin deficits hypothesis by reviewing relevant empirical research to establish the state of existing knowledge, identify the knowledge gap and provide further research guidelines.

Methodology: A systematic literature review on the Forty-Five articles is from the Scopus and Google Scholar Database covering from 2000 to 2021; identifying, screening, eligibility and included stages are proceeded to adopt the standard Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA).

Findings: Keynesian, Ricardian Equivalence, Mundell Fleming models of twin deficit hypothesis are remarkable arguments between researchers over decades. Not all theoretical concepts apply across all countries in testing the validity and causality of two deficits due to the choice of countries, research methods, econometric models, sample size and the study period. There are three distinctive arguments of the causal relationship between two deficits; the unilateral direction of two deficits which is the budget deficit causes the current account deficit, and the current account causes the budget deficit; no causal relationship between two deficits, and the existence of bidirectional causality between two deficits.

Implications: This research implies that a comprehensive understanding of the causality of two deficits and their effects on macroeconomic imbalance is essential for policymakers and empirical researchers to consider the econometric strategy for all countries.

Keywords: Twin deficits hypothesis, Budget Deficit, Current Account Deficit, Systematic Literature Review, Meta-Analysis

1. Introduction

In macroeconomics, the controversial empirical findings of the causality relation between the current account deficit (CAD) and the budget deficit (BD) continuously debate among researchers, known as the Twin Deficit Hypothesis (TDH). A large budget deficit may cause economic instability and lead to a sharp increase in current account deficit and interest rate, which reduces investment and aggregate demand negatively affect long-term economic growth. In the 1980s, debates on the causality of the twin deficits in theories and empirical literature for many countries over the past decades are the main concern among researchers subsequently most economies became experienced in persistent trade and fiscal imbalance and
the consequences of the twin deficit have been marked as unsustainable budget deficits that widen the external account deficits. On the other hand, the external imbalance is also important for the reflection of exchange rate alignment which is harder to adjust to stabilize otherwise it pushes more pressures of the public financing of an economy, it most experienced in the developing countries.

Validating the casualty relation of twin deficit hypothesis, many researchers pay attention the theoretical models of Keynesian theory, the Ricardian equivalence hypothesis, Mundell Fleming Theory, and the Feldstein-Horioka Puzzle in their empirical studies. Casualties and directional relationships between two deficits results vary due to the use of the difference in time dimensions, type of economy, practices of economic system, the choice of model specification & research method, data used in the analysis (time series or panel data), and validation test of the two deficits. This study focuses on understanding the conceptualisation of the variation of the twin deficit phenomenon; “How empirical researchers did investigation on the different country context of the budget deficit and current account deficit to validate theories with relevant methodologies?” The core aims of this systematic literature are to propose some theoretical, empirical, contextual and methodological to review from the recent related empirical studies on the twin deficits hypothesis and conceptualise the relationship from the existing researches to establish the state of current knowledge, identify the knowledge gap, and provide the guideline for further research.

2. Methodology

In ensuring the quality of the review, the validity to choose the appropriate research method is important to improve future research work, to understand to what extent further research is necessary or not necessary to do through existing in the previous research is important. The core aim of this review is to figure out the potential interest on the topic to make the conceptualisation from the empirical research. It presents the comprehensive and intellectually stimulation which validates the reliability to understand future research. This research is a qualitative research work, reviewing the document that published articles related to the topic. Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) tools is chosen to select the research articles. The reason for using the tools is that new literature review methods have been developed systematically (Page et al., 2021) to assess avoiding bias results that included in the research studies. It is also eliminating the bias in the development of new tools to appraise the literature through systematic reviews. Material Resources are reviewed more scientifically, the title, the abstract, and the authors are chosen as the research topic to minimise the bias. A reliable database that has solid academic papers such as Scopus, Google Scholar were searched.

With regards to methods of data collection, 210 articles are screened from Scopus and Google Scholar Database. The Search String uses the key words as “twin deficit hypothesis”, “Budget Deficit (BD)”, “Current Account Deficit (CAD)” and the article publication year is chosen from 2000 to 2021. The critical appraisal method uses to assess the quality of articles (Katrak, Bialocerkowski, Massym Kumar & Grimmer, 2004). Then, the study confirms the database, two strategies for screening used; the first pass (title, abstract) to remove the irrelevant material by justification with the research question for exclusion, then continue to the second stage screening, read the full text of the articles that compliances of the eligibility of the papers proving that the reason for choosing such as year, document type, publication stage, source type and the use of language (Wright, Brand, Dunn & Spindler, 2007). Dissertation, books and conference papers were excluded from the study. Data extraction to include the name of
journals, research design, methods to collect the data, model specification, and analysis framework. This follows by the criteria of choosing the topic relevant paper (Tawfik, Dila, & Mohamed, 2019).

Steps to conducting SLR for the Empirical Studies Related to Budget Deficit, Current Account Deficit: The research study uses the Describe the search and selection process results, from the number of records identified to the number of studies included in the review, ideally using a flow diagram (Page et al., 2021). This flow diagram shows how researcher selects articles from the database

![Flow Diagram](Image)

**Figure 2.1 Identification, screening, eligibility and included process**
(Source: The PRISMA 2020 Statement)

### 3. Results

Theoretically focused empirical articles are mainly from the concept of competing schools of thought of the twin deficit: Keynesian, Mundell Fleming and Ricardian Equivalence model by modifying the appropriate model for their chosen countries. The notion of the twin deficit was a new important economic issue in the 1980s, starting from the US due to the unprecedented co-movement between government budget deficit and current account deficit that increases indebtedness, which sparked debates on their linkage (Dey & Tareque, 2021). Keynes gives the critical consideration of the twin deficit for both developed and developing countries. A budget deficit can exist when tax cuts raise disposable income, directly stimulating the aggregate demand; on the other hand, the budget deficit stimulates increasing interest rates and offsets the private investment due to the higher interest rate. There is a presumption that the budget balance is only during the stability time (peacetime); there cannot be during the recession when the business cycle has fluctuated over time (Baharumshah & Lau, 2009). The
Keynesian framework mainly focused on the fiscal expansion that creates deficit and effect on an economy's aggregate demand.

Ricardian Equivalence Hypothesis (REH) is one of the twin deficit models, the change in temporary government spending can affect the trade deficit in the framework. Most empirical research that uses the REH model confirms that the budget deficit does not stimulate the aggregate demand, there is no natural effect on the current account deficit and there is no casualty running from the government budget to the trade deficit. Both theories are application and reasonable basis for investigating of the twin deficit hypothesis for the developing countries. It confirmed that the validity of the relation is also concerned with short-run and long-run issues. Although stimulating aggregate demand with the Keynesian model setting is correct in the short run, it is crucial to consider the integrational issues on capital accumulation and capital stock in the long run. Conceptualised on the econometric model in reviewed articles are presented the significance of the choice of model in the empirical research.

Mundell Fleming model provides the theoretical justification for the twin deficit relation. The work of Mundell Fleming implies that interest rates and exchange rates are the main links that interchangeably link to the deficits raised by the fiscal expansion under the assumption of stability in the internal and external balances (Pahlavani & Saleh, 2009). A change in the price of foreign exchange adjusts to maintain an equilibrium of internal and external balance that affects the price and output. There is controversial debating on the model due to the use of the structural model. It is essential to touch on the entire structural model to see the link between the two deficits systematically. Under the interest rate assumption, the exchange rate and income can be adjusted to the external deficit, which is explicitly related to the internal balances of the economy.

The study also views the research method used in the papers to align with the sequence of the findings. Two hundred ten pieces of budget deficit and current account deficit literature on the publication year from 2000–2021; this study found only 58 empirical studies whose findings addressed one of the three dimensions to measure the causality of the twin deficit. Forty-five articles using time-series data or/and panel data in the study. Results of forty-three articles are presented in the following Table 3.1 as a summary statistics for each article which is composed of the author (year of publication), study period, study area, analysis tools to test the twin hypothesis and a summary of their estimates and precision by synthesis of the research outcomes.

<table>
<thead>
<tr>
<th>Author</th>
<th>Study Period</th>
<th>Country</th>
<th>Analysis Tools</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Abbassi, Baseri, &amp; Alavi, 2015)</td>
<td>1981-2012</td>
<td>Iran</td>
<td>GMM</td>
<td>Positive Relationship BD and CAD</td>
</tr>
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<td>(Abu &amp; Gamal, 2020)</td>
<td>1981-2017</td>
<td>Nigeria</td>
<td>ARDL &amp; DOLS</td>
<td>CAD to BD</td>
</tr>
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<td>(Ahmad, Aworinde, &amp; Martin, 2015)</td>
<td>1980-2009</td>
<td>Africa (9 countries)</td>
<td>Cointegration and Hansen</td>
<td>Positive relationship CAD and FD</td>
</tr>
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<td>(Asrafuzzaman, Roy, &amp; Gupta, 2013)</td>
<td>1972-2012</td>
<td>Bangladesh</td>
<td>GC &amp; JC</td>
<td>BD cause TD and vice versa but not stand for the LR dynamics</td>
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<td>Author(s)</td>
<td>Year Range</td>
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<td>Baharumshah &amp; Lau, 2009</td>
<td>1980-2006</td>
<td>East Asian Countries</td>
<td>GH Cointegration BD to CAD Indonesia, Korea, the Philippines, Thailand Neutrality: Japan, Singapore</td>
<td></td>
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<tr>
<td>Baharumshah, Lau, &amp; Khalid, 2006</td>
<td>1976-2000</td>
<td>ASEAN-4 countries</td>
<td>VAR &amp; Variance Decomposition Keynesian proposition support ASEAN in LR. BD causes CAD</td>
<td></td>
</tr>
<tr>
<td>Baharumshah, Ismail &amp; Lau, 2009</td>
<td>1960-2003</td>
<td>ASEAN-5-Perpective</td>
<td>VAR VECM Granger- CAB causes BB. (Unidirectional) No causality from BB to CAB</td>
<td></td>
</tr>
<tr>
<td>Banday &amp; Aneja, 2019</td>
<td>1985-2016</td>
<td>China</td>
<td>ARDL, ZA BD reduces CAB BD increases CAB</td>
<td></td>
</tr>
<tr>
<td>Banday &amp; Aneja, 2017</td>
<td>1990-2015</td>
<td>India</td>
<td>Cointegration analysis, VECM and GC LR relationship BD and CAD (Bidirectional) Validates Keynesian proposition in India.</td>
<td></td>
</tr>
<tr>
<td>Banday &amp; Aneja, 2016</td>
<td>1990-2013</td>
<td>Indian</td>
<td>VAR VECM Granger TDH exists as opposed by direction between BD and CAD</td>
<td></td>
</tr>
<tr>
<td>Belguith, 2016</td>
<td>1990-2012</td>
<td>8 MENA countries</td>
<td>Using Cointegration Test, ECM, GC, VAR CAD to BD (Kuwait, Egypt) Reverse causality for Saudi Arabia supporting TDH.</td>
<td></td>
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<tr>
<td>Bucevska, 2020</td>
<td>2005-2017</td>
<td>North Macedonia</td>
<td>GC, VAR and VECM CA imbalances through fiscal policy will be inefficient (SR)</td>
<td></td>
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<tr>
<td>Dey &amp; Tareque, 2021</td>
<td>1980-2015</td>
<td>Bangladesh</td>
<td>AR, ARDL, GC SR and LR result support TDH. BD to CAD (LR Unidirectional)</td>
<td></td>
</tr>
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<td>Erdoğan &amp; Yıldırım, 2014</td>
<td>2001-2012</td>
<td>Turkey</td>
<td>VAR VECM GC Negative BD to CA in SR</td>
<td></td>
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<td>Helmy, 2018</td>
<td>1974-2014</td>
<td>Egypt</td>
<td>Multivariate VECM, Reverse GC TB improves its FB SR reverse causation from the CAD to BD. Refutes the TDH</td>
<td></td>
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<td>Helmy &amp; Zaki , 2017</td>
<td>2002-2014</td>
<td>Egypt.</td>
<td>GC and ECM Reject TDH. CAD to BD - Reversed causality</td>
<td></td>
</tr>
<tr>
<td>Kiran, 2011</td>
<td>1975-2009</td>
<td>Turkey</td>
<td>GPH test Limited evidence relationship between TD and BD,</td>
<td></td>
</tr>
<tr>
<td>Kim &amp; Kim, 2006</td>
<td>1970-2003</td>
<td>Korea</td>
<td>VAR, ECM CAD to BD is Unidirectional</td>
<td></td>
</tr>
<tr>
<td>Kuncabypo, 2016</td>
<td>1981-2012</td>
<td>Indonesia</td>
<td>Bivariate Non-Granger Casualty BD influences CAD</td>
<td></td>
</tr>
<tr>
<td>Kulkarni &amp; Erickson, 2001</td>
<td>1979-1996</td>
<td>India, Pakistan &amp;Mexico.</td>
<td>GC No evidence in India. Strong evidence in Mexico. TD creating the BD Pakistan.</td>
<td></td>
</tr>
<tr>
<td>Lau &amp; Baharumshah, 2006</td>
<td>1980-2001</td>
<td>9 Asian Countries</td>
<td>OLS, VAR, GC ADF, VECM Causality of CAD and BD (Indonesia, Malaysia, Nepal, the Philippines, Sri Lanka, Thailand; CAD cause BD-Myanmar) BD causes CAD (Korea, Singapore)</td>
<td></td>
</tr>
<tr>
<td>Lau &amp; Tang, 2009</td>
<td>1996-2006</td>
<td>Cambodia</td>
<td>ADF, DFGLS, KPSS, BD and TD (LR strong cointegrated) Bidirectional of two deficits</td>
<td></td>
</tr>
<tr>
<td>Magazzino, 2012</td>
<td>1970-2010</td>
<td>Italy</td>
<td>GC TD to BD (Unidirectional) TB causes BD (SR) No long-run relationship</td>
<td></td>
</tr>
<tr>
<td>Magazzino, 2020</td>
<td>1980-2012</td>
<td>ASEAN countries.</td>
<td>GC TD and BD (LR relation) ASEAN-6 &amp; ASEAN-10</td>
<td></td>
</tr>
<tr>
<td>Mirdala, 2015</td>
<td>2000-2012</td>
<td>European economies</td>
<td>VARM CAD to FD, Confirming TDH</td>
<td></td>
</tr>
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4. Discussion

Theories in the articles are the concept of Keynesian, Ricardian Equivalence, Mundell Fleming models of twin deficit hypothesis, which are remarkable arguments among empirical researchers over decades for both developed and developing countries. Not all theoretical concepts apply across all countries in testing the validity and causality of two deficits due to the choice of countries, research methods, econometric models, sample size and the study period. When positive threshold cointegrating relationship between the current account deficit and fiscal deficit found in Nine African countries that conducted by Ahmad, Aworinde & Martin (2015), Nigeria economy by Onafowora & Owoye (2006), ASEAN countries by Magazzino (2020), Iran economy by Abbassi, Baseri & Alavi (2015), and India economy by Banday & Aneja (2016). However, Erdoğan & Yıldırım (2014) conducted for Turkey, the result showed that there is negative relation and Kulkarni & Erickson (2001) failed to establish a consensus of causality results for the study of India, Pakistan and Mexico like Lau & Baharumshah (2006) and Baharumshah & Lau (2007). In this debate, the findings have
different themes of the causal relationship between two deficits; the unilateral direction of two deficits which is the budget deficit causes the current account deficit, and the current account causes the budget deficit; no causal relationship between two deficits, and the existence of bidirectional causality between two deficits. From the systematic literature review.

4.1 Bidirectional Relationship between Budget Deficit and Current Account Deficit
Among the 45 articles, forty-three articles discussed in the panel data analysis and Time Series data analysis section. First of all, the scope of the study of Asia and Europe are mainly selected to see the bidirectional relationship between current account deficit and budget deficit. There can be two results- current account deficit cause budget deficit and vice versa. (Shastri, Giri, & Mohapatra, 2017). Furthermore, Shastri (2019) applied Autoregressive Distributed Lag (ARDL) approach, Toda Yamamoto approach, and Dumitrescu - Hurlin Causality and Block Exogeneous approach for the study of India, Bangladesh, Pakistan, Sri Lanka and Nepal, by the who predicts the effect of budget balance on current account balance via the changes of interest rate and exchange rate using panel data. It found that bidirectional causation between the two balances for India and Bangladesh, the validity of twin hypothesis is found in Pakistan and Sri Lanka and but there was a reverse causation from CAD to budget BD in Nepal.

The existence of bi-causality is the most complicated situation in practice. The clear direction cannot be interpreted, especially in panel data; mixed results are in several types of research. The effect of budget deficit on the current account deficit possibly comes through the direct demand effect. Sinčáková, Suličková & Gavurova (2017) observed the bidirectional causality between the two deficits in Portugal, Ireland, Italy, Greece, and Spain (PIIGS), the result showed that budget deficit implies current account deficit the study of Netherlands, Greece, Italy, Portugal, Cyprus, Czech Republic, and Croatia, but it is not the same country of Belgium, Finland, France, Ireland, Malta, and Romania. Bi-causality in Spain and Hungary.

The study of middle east countries Belguith (2016) and Lau & Baharumshah (2006) are regional perspective studies. Belguith (2016) reported that there is mixed directional for MENA countries, the current account deficit causes a budget deficit in Kuwait and Egypt, and the reverse causality relationship was found in the Saudi Arabia that support twin deficit hypothesis. Nonetheless, there is no relationship in other countries. Similar results were in Indonesia, Korea, Malaysia, Myanmar, Nepal, Singapore, Sri Lanka, Philippines, Thailand. Mixed results in seeing the review. When Lau & Baharumshah (2006) analyse SAARC countries to test causal relation between CAD and BD using OLS, VAR Granger Causality ADF, VECM methods, the result shows that there is current account deficit causes budget deficits in Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Thailand. The current account deficit causes a budget deficit in Myanmar, and the budget deficit causes a current account deficit in Korea and Singapore. Ravinthirakumaran, Selvanathan, & Selvanath (2016) proved the mixed direction of the relationship in their study, unidirectional from the current account deficit to the budget deficit in the short run in Bangladesh, but BD causes a current account deficit for Pakistan and Sri Lanka, whereas the reverse is true in India and Nepal.

Ahmad, Aworinde &Martin (2015) test African countries showing that there is a positive relation relationship between two deficits and BD supports the THD, however, the negative relationship between the two is for Ethiopia, Kenya, South Africa and Uganda. Researchers like Asrafuzzaman, Roy & Gupta (2013), Banday & Aneja (2017), Banday & Aneja (2019), Lau & Tang (2009), Mukhtar, Zakaria & Ahmed (2007), and Pahlavani & Saleh (2009), tested the short term and long-term relation using time series data to validate the Keynesian proposition and prove the effect of causality between these two deficits. The research methods
which are commonly used in most papers are VECM model, autoregressive distributed lag (ARDL), the Zivot and Andrew (ZA), Granger causality test, ADF, Dickey-Fuller Test with GLS Detrending (DFGLS), Kwiatkowski–Phillips–Schmidt–Shin (KPSS), and Johansen's multivariate cointegration test. Their reported evidence was supportive of bi-directional causality between the twin deficits.

The existence of bi-directional causality between two deficits has a long-run relationship in India that tested by Banday & Aneja (2017) is different from the finding of Asrafuzzaman, Roy & Gupta (2013). The result does not stand for the long-run dynamics, but it is bidirectional in the short run; the long-run relationship depends on the overall macroeconomic environment and performances of other relevant variables in the case of Bangladesh. Banday & Aneja (2019) use (ARDL) bounds and the Zivot and Andrew (ZA) to test for the Chinese economy, structural break negatively shocks the budget deficit, which reduces CAB, and BD positively increases CAB. The higher effect of Chinese economic growth shocks and fluctuated exchange rate led to a divergence of the deficits. The policymaker pays much attention to the interest rate and inflation to be more stable.

Lau & Tang (2009) studied Cambodia from 1996–2006 using ADF, DFGLS and KPSS Johansen's multivariate cointegration test. There is a robust bi-directional correlation between budget deficit and trade deficit; two deficits were cointegrated in the long run that is similar to the Pakistan economy conducted by Mukhtar, Zakaria & Ahmed (2007) and the Philippines economy by Pahlavani & Saleh (2009). Baharumshah & Lau (2009) tested East Asian Countries using Gregory and Hansen, the twin deficit hypothesis exists in four countries, which is less likely to have strong evidence from the sample, but Singapore and Japan were found to be highly developed financial systems. Under the fixed exchange rate system, when the government budget deficit is highly related to the exchange rate, the monetary expansion affects the unbalance of the currency market resulting in unfavourable current accounts. On the other hand, increasing international demand improves the current account balance and encourages increased government revenue from export reception, and the budget deficit will be depressed.

4.2 Unidirectional relationship between Budget Deficit and Current Account Deficit
For the unidirectional relation, there is two different unidirectional between budget and current account deficit; budget deficit causes current account deficits, and current account deficits causes budget deficits.

4.2.1 Budget Deficit causes Current Account Deficit.
Analysis on Budget deficit causes current account deficits findings mainly based on Keynesian Absorption theory. It explains that increasing budget deficit presses the increasing demand aggregate and gross domestic products that stimulate import demand and accelerate the current account balance to worsen. In this background, researchers investigated the validation of the theories to see the effect of budget deficit on current account deficit; Baharumshah & Lau (2007), Baharumshah, Lau & Khalid (2006), Dey & Tareque (2021) and Forte & Magazzino (2013), Kuncahyo (2016), Neaime (2015), Pattichis (2004), Vamvoukas (1999) found the unidirectional relationship between two deficits. The direct cause from budget deficit to current account deficit tested in ASEAN-4 countries studied by Baharumshah, Lau & Khalid (2006), Bangladesh by Dey & Tareque (2021), Indonesia by Kuncahyo (2016), Lebanon by Neaime (2015), Thailand by Baharumshah & Lau (2007), Lebanon by Pattichis (2004), 33 European countries by Forte & Magazzino (2013). Baharumshah & Lau (2009) investigated East Asian countries from 1980 to 2006 using Cross-sectional Panel Data was done by they applied the
Zivot and Andrews (Z&A) and Gregory & Hansen Cointegration research method to test the causality of two deficits. The result supports the twin hypothesis only for Malaysia, but budget deficit experience in Indonesia, Korea, the Philippines, and Thailand causes their current account deficit, and neutrality is for Japan and Singapore due to the structural break. The budget deficit may also reduce the current account deficit. On the one hand, the interest rate also appreciates the exchange rate, leading to the widening of the current account deficit. Under the fixed exchange rate system, expansive fiscal policy increase interest rate then pulls capital inflows. Increasing of capital inflows increases a demand to domestic currency and affects appreciation of exchange rate. The situation encourages to the current account deficit. To avoid macroeconomic imbalances in both internal and external, CAD and BD are not only under control of the respective country but also related to the international economic factors. There is no exception for the developing countries, several authors have expressed the situation that an unsustainable balance budget widens the current account deficit (Lau, Mansor, & Puah, 2010).

4.2.2 Current Account Deficit causes Budget Deficit.
Nikiforos, Carvalho & Schoder (2015), and Helmy (2018) tested Egypt using the Multivariate VECM model and Reverse granger causality. Trade balance improves its fiscal balance and short-run causation from the current account deficit to the budget deficit, contradicting the twin deficit hypothesis. Granger causality–Wald test on the Peru economy to causality, current account causes fiscal deficit. Unlike previous empirical evidence, the reverse causality indicates that the negative causation is from the inadequate fiscal consumption when people are optimistic about the economic situation that moves to permanent shocks to the current account. Sobrino (2013) argued that the fiscal policy does not affect the current account in the study. However, improvements in the current account increase the probability of attaining a lower bounded fiscal deficit similar to Baharumshah, Ismail & Lau (2009) in the study of ASEAN-5-Perspective and Kim & Kim (2006) in the study of Korea, the Vector Error Correction Model Granger test proved that there is unidirectional causality from CAB towards budget balance. However, there was no causality from the budget balance towards the current account balance for the rest country.

The study of Nigeria used Autoregressive Distributed Lag (ARDL) and Dynamic Ordinary Least Squares (DOLS) estimation techniques. The estimation results show that increases in budget deficits lead to increases in Nigeria's current account deficits in both short and in the long run. This finding validates the Keynesian assertion but refutes the Ricardian Equivalence Hypothesis concerning the relationship between the two deficits in Nigeria (Abu and Gamal, 2020). Helmy (2018) investigated the Egypt economy using the VAR model for the short-run causal running from the CAD to the BD; there is Cointegration between the BD and TD. Findings of Mirdala (2015) refutes the TDH in favour of the CA targeting hypothesis using a multivariate VECM model; Egypt's trade balance would ultimately improve its fiscal balance. Current account imbalance can worsen and slow down economic growth because it reduces foreign exchange reserves or increases debt, which becomes a burden of the economy that directly links to the government budget deficit. This relationship found in the analysis of developing countries, unfavourable international relations, global business expansion, and foreign direct investment threaten the domestic industry, reducing government revenue.

4.3 No Causal relationship between Budget Deficit and Current Account Deficit
Empirical work in the Asian context Lau & Baharumshah (2006), Baharumshah et al., (2006), and Baharumshah & Lau (2007) failed to establish a consensus of causality results as well as the study of India, Pakistan and Mexico (Kulkarni and Erickson, 2001). The evidence shows
for Pakistan is that trade deficits created budget deficits. However, there is limited evidence to show why the twin deficit in this period. There is no evidence of twin deficits occurring in Mexico, and substantial evidence was in India. Bucevska (2020) used the Granger causality, VAR and VECM research methods to test the cointegration and casualty of two deficits; the country has been improving the current account imbalances through fiscal policy, but it is inefficient in the short run. Kiran (2011) performed Geweke and Porter-Hudak Test to see a fractional cointegration relationship between them; the evidence showed a little evidence to support the validity of the twin deficits hypothesis for Turkey. Magazzino (2012) also agreed that unidirectional flow from trade deficits to budget deficits is only for the short run, but no long-run cointegration exists between these variables, which is the same as the study of Egypt by Ratha (2012). Based on the above all findings showed a relationship of twin deficits positively, negatively and there is no relationship direction of the budget deficit that influences the current account deficit. Budget deficit effects on the current account deficit are also related to the interest rate and exchange rate.

5. Policy Implications

Prevailing of twin deficits hypothesis suggests implication policy of effort for decreasing current account deficit which requires to make adjustment mechanism of the fiscal policy and predict the dynamics economy in the future. Decreasing the budget deficit becomes one of the requirements efforts to reduce the current account deficit. There has been movement between the budget and current account deficits over the past three decades as unidirectional, bidirectional, and neutral causal results are essential for the policy initiatives to improve the trade balance through export promotion and import substitution strategies which are serious attention for all economies. In the short and long run, the trend to predict an economy and the aggregate economic variable composed in the twin deficit identity is also crucial in investigation. Although theory indicates that the budget deficit and the current account deficit should move together, it is not easy to consider two different markets to get the general equilibrium in the same direction. Different directional occurs in several analyses due to the different economic activities and policies practices. The effect of structure break, degree of openness and trade composition, fiscal consolidation, the exchange rate system, and external impact should be considered in the investigation. It is essential to manage if the economy has faced these deficits as an essential national agenda to sustain budget deficit and current account deficit. To complement with appropriateness coordination of adopting balance structure of fiscal and monetary country can be promoting macroeconomic stability and sustainability for all economies.

6. Conclusion

The study's main objectives are to summarize the theoretical argument of the twin deficit, review the existing literature, and apply the twin deficit idea to different types of countries, including developed and developing countries data, to test evidence of its relation using different econometric techniques. The study mainly covers Asian developing countries, middle east countries and some developing countries from the European countries understanding the establishment of the integrated monetary and fiscal policies in the country including structural tax rate systems, controlled trade policies, the foreign direct investment that link to the national income. The traditional ways have been analyzed the twin deficit identity to see the link of the budget deficit and current account in most studies, the relative strength of both effects is not only from the fiscal and monetary policy action by the single economy but is also related to how much an economy open to the world. The degree of openness, capital flows, the
international spillover effects, and other monetary variables should be used in testing the hypothesis for future research.

References


AN INSIGHT OF FAMILY BUSINESS COMPETITIVE RESOURCES: THE ROLE OF SOCIAL CAPITAL RESOURCES IN FAMILY BUSINESS GROWTH AND SURVIVAL

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ABSTRACT

Purpose – This paper offers few focus points by sighting the resources reserves exclusively available for family businesses (FBs); namely, social capital resources which include family prominence, family enrichment, and family continuity using the lens of resource-based view theory (RBV). The aim is to look into the impact of these resources on business performance, which is exclusively available to family firms considering the role of innovativeness. It is observed that most of the family businesses are failing during the transitional phase from one generation to the next. Only 12% make it to that distance, and the numbers getting past four generations before dropping to as short as 3%. The literature review focused on the exclusive resources held by the family businesses. Some of these become the compulsory part of business resource reserves and therefore firms need to learn to live with them considering their economic and non-economic benefits. The literature gap in FBs and RBV pointed that not all the firm’s resources provide economic contribution even if they are part of business resource reserves. Family firms’ decision-makers must consider the economic contribution of a particular resource when acquiring or developing its resource reserves to survive and grow.

Keywords – Family business, social capital resources, family prominence, family enrichment and family continuity, RBV

Design/methodology/approach – This study includes a content analysis.

Findings – Family Businesses (FBs) should have only those resources, which contribute to value creation for the customers and the organization. The presence of any other resource, which cannot create value, is a waste of value. There are certain resources exclusively available to FBs, which may or may not create value for the business. It is the family members’ responsibility to decide that what kind of resources they should acquire or develop which have some economic contribution to the business. This decision should be taken considering the economic value of each of the targeted resources either acquired from the factor market or developed internally. It is also observed that there are some certain resources, which become the compulsory part of the family organizations with no economic contribution and in some cases negatively affect the business but organizations cannot set them aside. They must learn to live with them to minimize their negative economic contribution towards businesses.

Practical implications – If the economically potential resources are acquired and developed, which are exclusively available for FBs while considering their economic contribution, they may improve the business growth and performance. This paper will offer some insights about the resource reserves that FBs must understand and realize their economic contribution to the business at the time of their acquisition or development. Additionally, FBs need to learn to live with some essential resources, which are the compulsory part of the business.
Originality/value – To understand the potential economic value of some resources, which are exclusively available for FBs while some of which are the compulsory part of family businesses. This may help decision-makers to provide some guidelines for the development of a firm’s resource reserves, which eventually will lead towards better performance.

Keywords – Resource-based view (RBV), Family business to understand theses (FBs), Exclusive resource reserves

Paper type – Conceptual paper

1. Introduction

Family businesses (FBs) supply an important arrangement for wealth creation and economic activities in which they play a vital role all over the world. A study stated that over two-thirds of all worldwide businesses are owned and retained by families’ firms and becomes responsible for about half of the total GDP (Gross Domestic Product) (Rahman et al., 2017). According to International Finance Corporation, between 75% and 90% of the entire world’s business is consisted of family companies (Gedajlovic et al., 2012). In most economies, FBs create 50% to 80% of jobs worldwide and contribute significantly to national earnings, development, and employment. Many large companies also fall into this category, including Walmart, Ford, Koch industries, Samsung, Lowes, Ike, Li, and Fung are some examples of successful family businesses. Surprisingly, nearly 35 percent of Fortune 500 companies are family-owned businesses. Family organizations outclass their industries cluster and non-family counterparts. It is important to mention that the family business net income to net worth ratio was 75% greater than the organizations, which are controlled by executives (Monsen R.J., 1969). Such economies where family businesses have major contributions may be known as the family business-based economy (FBs-economy). Most of the time, the owner desires to transfer his/her business to the next generation as it has already been established but data reveals that this transition doesn’t take place effectively because of certain reasons and therefore these established businesses had to face failure. According to The Family Firm Institute, about 30 percent of family businesses (FBs) survive into the second generation, 12 percent are sustainable into the third generation, and only about 3 percent of all family businesses keep activate themselves into the fourth generation or beyond. Research has identified many factors, which became the cause of FBs failure (Miller, D. et al., 2003; Bushe, B. et al., 2019) but at times, they outperform their peers, especially when the economy collapses. During the financial crisis of 2008/09, the Average ROE (Return on Equity) of FBs stayed nearly unaffected, while the average non-family businesses suffered a big drop in their yields.

The challenges for the FBs begin to arise when these organizations become more complex and the size of the business family becomes bigger. As the next generation gets ready to join the family businesses, it makes the overall environment more complex. Different family members introduce different management styles and different approaches to handling business problems. Most of the problems arise when responsibilities start blurring or an implicit assumption on the part of the owners and the family members that they enjoy veto powers in the decision-making process to overrule other shareholders or board directors. Many FBs go through the ritual but hardly comply with the code in actual practice. Most of the disharmony and pressures pulling the business in different directions arise because of this detachment. They hardly realize that by doing so, they are subtracting value from the enterprise and in all these situations and start ignoring to develop their organizational resource reserves, which are necessary for the firm’s survival and growth. They do not upgrade their resource reserves in terms of innovation with the time, which also becomes a hurdle for them to be more competitive in the market that could be one of the reasons for their failure and keep struggling with emotional decisions due to family bonding. FBs may be good at developing the traditional resource reserves as required to run the routine business but they ignore such resources, which are necessary to be competitive in demanding and challenging uncertain business environments. The focus of this paper is limited to the resources, which are exclusively available to the FBs. Some of them become an essential part of the business’s resource reserves and cannot be separated from the business entity. These resources may be categorized as family’s social capital resources, which include family prominence, family continuity, and family enrichment. This exclusive resource reserve available for these FBs is hardly discussed in the literature.
of FBs and therefore, more attention is required in this area to explore where social capital resources may be used as the FBs resource and their contribution to growth. FBs must learn to live with these types of resources, which grow gradually and establish themselves with the family business entity whereas some of the resources might not even be beneficial for growth but FBs need to learn with them, as they cannot be separated. This paper highlights the special attributes attached with particular resources along with their economic and non-economic contribution to the business.

2. Terminology

As few ideas are discussed here from “strategy” and “family businesses” fields and few of them are newly introduced, it would be better to define them first.

**Family Business** is when two or more family members are actively (full time) involved in business activities (Barnes & Hershon, 1976; Burch, 1972).

**Resources exclusiveness** refers to only those resources, which are available for family businesses.

**Family prominence** discusses that how the owners of the business family are recognized by society due to their business activities.

**Family continuity** represents the importance to family decision-makers in the way they preserve the control and involvement of the family members in business activities.

**Family enrichment** indicates the significance of the aspiration to meet the broader range of commitments toward family members.

3. Discussion

One of the foundations to ensure, the constant growth of firms is the ability the manage their resources that included resource structuring, bundling, and leveraging their capabilities (Sirmon *et al.*, 2007). These resources may be classified as a firm’s social capital resources (Barney, J. 1991; Grant, 1991; Hunt, 1995; Habbershon, T. G., & Williams, M. L., 1999). Research indicates that family firms are hesitant to transform themselves or finance any new project because it may produce a new risky situation for their businesses (Zahra, S. A. 2005; Naldi, L. *et al.*, 2013; Gomez-Mejía, L. R. *et al.*, 2007). All the firms possess limited resources including FBs but they have some exclusive resource reserves e.g. family prominence, family continuity, and family enrichment, which contribute positively and negatively to the economic contribution of business. In FBs, decision-makers consider both economic and non-economic factors and therefore sometimes they have to take such decisions which may be good for the family but not for the business.

They have some certain limitations and due to family involvement and non-economic decisions, they are more dependent on their internal family competencies. However, the growth and competition require continuous investment in resource reserves and firm’s innovative capacity, thus deciding to make family firms more competitive becomes more complex. On one side, family firms, which do not invest time in resource development required for their growth or survival, faced failure, and on the other side, the dynamic, unique, and risk averting nature of family firms along with emotions based decisions do not allow them to develop their required resource reserves, resulting failure to bring innovativeness in business. With the increase of competition and with such a high rate of failure, FBs also need to go back to their stock reserves and upgrade them according to the business environmental requirements.

FBs require to set develop such a resource reserve, which can be helping in finding the business opportunities and then exploiting them. It is also observed that FBs are reluctant in acquiring resources e.g. the latest technology and new techniques that may be helpful in their survival (Papon, I. A. *et al.*, 2017). Resources building is not that easy for family firms as compare to non-family businesses because they have different risks involved in resource acquisition (Zahra, 2005). It is more challenging and complex for FBs to look into the risks of finance as well as their continued family beliefs. Few families can be observed having a culture of proactive approach and risk-taking that encourages decisions for resource development while others prefer to work within margins and always seek their prominence in the family as well as in society (Gomez Mejia *et al.*, 2007). Family firms are more symbolic of family
Social Capital Resources and their contribution to FBs growth:

4. Family businesses and RBV

Resource-Based View (RBV) is one of the most important fields in the domain of “strategy” whereas it explains to the firms how to gain and sustain the competitive advantage. Much has been discussed in previous literature starting from its definitions to further progress (Schumpeter, 1934, Penrose 1959, Wenerfelt 1984) including the internal side (Barney, 1991; Sirmon et al 2007; Peteraf 1999) and external aspect (Porter 1985; Priem et al, 2013) its antecedents to consequences. However, there is a dearth of literature on ‘resource acquisition’ in family businesses and particularly those resources, which are exclusively attached to family businesses. The transformation of conventional firms into the most competitive firms is referred to in the literature as the firm having a source of competitive advantage and it is due to the acquisition of such resources that are valuable, rare, and inimitable, and organized (Barney, 1989). Not all firms have such resources that meet the criteria and that brings the difference in their performances. The arguments offered by the resource-based view (RBV) theory, a firm may achieve a competitive advantage and can successfully sustain if its owned resources are valuable, rare, and inimitable, and (VRIO) organized (Barney, 1989). These resources may include the firm’s social capital resources (Baker, 2000), organizational capital resources (Tomer, 1987), and process capital resources (Habbershon, T. G., & Williams, M. L., 2003). If these resources qualify to be fit in the VRIO framework then FBs may also claim for competitive advantage and the decision to acquire or develop the bundle of these exclusive resources should be based on economic benefits for their businesses (Barney et al, 1994). Empirical study also found that the growth of the firm is greatly influenced by the firm’s innovativeness and it has become a pre-requisite for a firm’s competitive advantage when they have limited resources (Van de Grande et al., 2009). Thus, the current study will use the wings of RBV theory to fly towards the FB’s survival and growth based on their exclusive resources. In short, unless the aspects of firm’s prominence, firm’s continuity, and firm’s enrichment (firm’s social capital resources) are investigated, the effort to increase the rate of FBs’ success and their contribution to any country’s economy will remain down or slow. Therefore, it is important to make FBs aware of the importance of acquiring or developing the required resource reserves needed to survive and grow when these resources become the essential part of their resource reserves. The key point is to develop a better understanding that how these exclusive resources (social capital resources) contribute positively or negatively play their role in growth and survival so that they develop only those resources, which contribute positively and learn to live with those resources, which contribute negatively but are the compulsory part of family businesses.

5. Social Capital Resources and their contribution to FBs growth:

Socioemotional Wealth (SEW)

Socioemotional wealth (SEW) can be described as an “affective endowment of family owners” (Gómez-Mejía et al., 2011) i.e. the non-economic, beneficial efficacies or standards a family stems from its tenure position in a specific firm (Gómez-Mejía et al., 2007; Berrone et al., 2012; Gómez-Mejía et al., 2011; Gómez-Mejía, Makri, & Kintana, 2010). The ratio of ancestry proprietorship is defined as a “theoretical driver” in SEW studies (Schulze & Kellermanns, 2015). Therefore, family ownership in a firm generates multidimensional as well as several influential standards for the possessing family, abstracted as SEW. Socioemotional wealth (SEW) has been defined utilizing an influential grant that members of the family derive out of the establishment (Berrone et al., 2012).
SEW is not a stock or an endowment itself but is a different view which proposes the attached endowment in such a way that reflects the importance of family business owners preferences for some particular benefits attached with this endowment which vary family to family (Jones, Makri & Gómez-Mejía, 2008). Research has identified that consider many other benefits other than financial benefits while making the decision (Gómez-Mejía et al., 2007, 2010) therefore, SEW has successfully grabbed the attention of many researchers (Berrone et al., 2012; Gómez-Mejía, Cruz, Berrone, & De Castro, 2011). Though a lot has been done in terms of research in the field of family businesses and particularly SEW it has also faced challenges in its measurement (Le Breton-Miller & Miller, 2013; Chrisman, Chua & De Massis, 2015; Kellermanns, Eddleston, & Zellweger, 2012; Miller & Le Breton-Miller, 2014; Schulze & Kellermanns, 2015; Vardaman & Gondo, 2014). It carried a criticism on the existing measures (Miller & Le Breton-Miller, 2014) where authors pointed out very blur the connection between the theory and its empirical connections (Schulze & Kellermanns, 2015). Few researchers showed their concern and emphasized multidimensional measures for the measurement of SEW that clutch the sentimental values range which is derived from family control (Vardaman & Gondo, 2014; Schulze & Kellermanns, 2015; Chua et al., 2015; Miller & Le Breton-Miller, 2014; Kellermanns et al., 2012; Zellweger et al., 2012). It has often been observed that the hunt for SEW may influence the financial performance negatively for the family business, therefore its relationship with financial outcomes may also depend on the type of SEW that is hunted (Miller & Breton-Miller, 2014). For example, involving relatives in business may not be financially beneficial for the firm as compared to hiring professionals in key positions. (Naldi, Cennamo, Corbetta, & Gomez-Mejia, 2013). The above discussion helps recognize the established role of SEW and its different dimensions in family businesses whereas non-family businesses do not consider SEW in their decision-making processes and their taken decision are purely for financial gains. Having said that, it was yet to be discovered which dimension of SEW plays its role to what extent and its ultimate impacts on a firm’s performance.

The SEW scale was again revised and labeled in three dimensions: (a) Family prominence; (b) Family continuity; and (c) Family enrichment (Debicki et al, 2016). Family prominence is related to building and maintaining the image of the family in the community. It is yet to be explored that to what extent these above-mentioned SEW dimensions play their roles and in whether they are going to negatively or positively contribute to a firm’s performance as a resource exclusively available for family businesses. In this paper, the relationship of family prominence, family continuity, and family enrichment, and firm growth will be discussed to see their impact on firm performance. For instance, family prominence may be beneficial for the firm as new business connections can be established using family prominence, which reflects its positive role in firm performance but on the other hand, to strengthen the family continuity, incompetent family members may be hired at key positions, which may negatively affect the firm’s performance. Therefore, one dimension of SEW resource may affect the firm’s performance positively and the other may influence negatively.

a) Family Prominence

The Family Prominence dimension represents that how the owners of the business family are recognized by society due to their business activities. In other words, this image is related to how the business family is treated by society others since it operates a business in a specific environment, and also because of the way the family offers itself to the community through the business in that specific surroundings. FBs consider few specific benefits attached with SEW and give very explicit importance with a desire to be recognized by the business community for their accomplishments. It becomes important when the value of this recognition and social support from extended family, friends, acquaintances, and the community have been identified as an important aspect of the firm’s prominence and reputation in the community (Tagiuri & Davis, 1992; Corbetta & Salvato, 2004). It is also considered important as family leaders recognized that these family business connections can help the family to conduct their businesses more effectively (Sirmon & Hitt, 2003; Arregle, Hitt, Sirmon, & Very, 2007). For instance, these family connections may help acquire new customers and potential business partners may choose the family firm because of its reputation for new business ties establishing the fact that it is run by a trustworthy business family. Therefore, it becomes important for these families to be able to utilize family social capital for the survival and growth of their business and, in turn, enhance the family’s social capital through the firm’s business relations.
b) Family Continuity
The Family Continuity dimension represents the importance to family decision-makers in the way they preserve the control and involvement in the business by the family. It is related to the intrinsic satisfaction, which family owners and managers originate from being able to contribute to the sustainability of the family firm and their active role in business affairs. In other words, this factor contains information about the importance of family unity in the business, disseminating family values, and establishing a family reign through their business operations. This dimension is concerned with the unification and continuation of the family’s connection in the business over the long term. It also suggests that the family owners believe in preserving the unity of the family if they involve family members in the pursuit of common business goals and at the same time maintain the family values in the operations of the business (Handler, 1990). Such values are also demonstrated while making transactions with customers and business partners in handling them and if less competent managers’ i.e. family members are placed in key positions, which may be a compromise on business’s economic gains (Berrone et al., 2012).

c) Family Enrichment
Family Enrichment is the last dimension of SEW which indicates the significance of the aspiration to meet the broader range of commitments toward family members. It not only enhances the harmony among the family members but also represents the altruism toward the family at a broader level and does not limited to the involvement of the family members in the business activities. In other words, Family Enrichment relates to the ability of the decision-makers in fulfilling the general family commitments while operating the business on daily basis. This factor is different from family continuity because it is more concerned about the decision-making process, which ensures family happiness and satisfaction in the short run, resulted in building harmony and enhancing the family’s well-being. Different researchers have identified altruistic behaviors as a distinct characteristic of family firms (Schulze, Lubatkin, Dino, & Buchholtz, 2001; Eddleston & Kellermanns, 2007). For instance, family obligations may be highly important for decision-makers in the family business, which indicates that they value the capacity for providing employment opportunities to family members in the firm (Jones et al., 2008) and therefore, brings or enhances the happiness and well-being of family members, even for those who do not play their active role in business operations. This becomes the cause to enhance the harmony and the satisfaction among the family members but at the same time, it is the reason to compromise on economic gains for the business (Berrone et al. 2012).

6. Past Studies on family business resources

<table>
<thead>
<tr>
<th>SOCIAL CAPITAL RESOURCES</th>
<th>Family firm Potential</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience, Training, Judgment, Managerial talent</td>
<td>Empowerment/Leadership Development</td>
<td>(Handler, 1989, 1992; Fiegener et al., 1994)</td>
</tr>
<tr>
<td>New employees socializing (Barney, 1986)</td>
<td>Family business more creative</td>
<td>(Pervin, 1997)</td>
</tr>
<tr>
<td>Individuals innovativeness(Collis, 1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsive to market trends (Collis, 1994)</td>
<td>More responsive to changes in a business environment</td>
<td>(Dreux, 1990)</td>
</tr>
<tr>
<td>In-house knowledge of technology (Wernerfelt, 1984)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge about the market environment (Nonaka, Takeuchi, &amp; Umemoto, 1995)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. Voyage toward the economic contribution of family’s social capital resources using innovativeness

Family prominence is related to the family perception in the business community that how it operates its business in a specific business environment or how the family presents itself as a business in a particular business community. Berron et al., 2012 identified a similar factor in his work with the name of ‘identification and social ties’ and it has the same spirit in its meanings. Social support and the recognition in the society is identified as an important aspect due to the extended family, friends, and the community as it reflects the reputation of the business family in the community (Tagiuri & Davis, 1992; Corbetta & Salvato, 2004). Family leaders may consider the family connections are much important to help the family in managing and improving their business (Arregle, Hitt, Sirmon, & Very, 2007; Sirmon & Hitt, 2003). For instance, they believe that new customers or new business connections can be developed by using family repute and image in society. Furthermore, potential business partners may choose to cooperate with the family firm because of family business relations, which establishes the fact that it is run by a trustworthy family. In other words, it becomes important for these families to be able to utilize family social capital for business purposes and, in turn, enhance the family’s social capital through the firm’s business relations. Family continuity as a culture of the organization may enhance family business role in the community and contribute positively to the economic benefits of the firm.

Family Continuity is related to the intrinsic contentment that family managers or owners may derive from being able to contribute that the family business is sustainable. The purpose of family continuity is to make active family involvement in business affairs, which gives a sense of ‘families to the family owners. This dimension is deeply oriented toward unification and continuation of the family’s involvement in business matters over a long time. This factor suggests that the family managers want to maintain the unity of the family by involving its members in the business activities and goals but at the same time maintaining family values (Handler, 1992). Such values may reflect in the way making transactions with customers or maybe the way business partners deal with each other. Over time, all these values become part of family business culture, and business is conducted by these established practices. This dimension also discovers that how important is to preserve the family dynasty through the family members’ involvement in the business. Thus family continuity as a culture of the organization may enhance family business role in the community but may compromise on financial gains due to placement of family members who might not be suitable for those key business positions.

Family Enrichment relates to the capability of family firm decision-makers if they are successfully fulfilling the general family obligations while operating their business on daily basis. This factor is different from family continuity, as it is not related to the involvement of the family members in business but to make those decisions that ensure family happiness and to some extent satisfy their needs in the short run, thereby building harmony and enhancing the family’s well-being. It is important to note here that the scope of family enrichment is not limited to the family members’ involvement in business matters but to enhance the harmony among the family members as a whole and also establishing altruism towards the family. Altruistic behaviors in family firms are recognized as a very distinct feature (Eddleston & Kellermanns, 2007) in which family obligations are highly important. It also indicates that ability to provide job opportunities to the family members is considered highly valued (Jones et al., 2008) because it becomes the source to enhance the happiness and well-being of the family in general, but may compromise on economic benefits available to the business because family members may not be fit for some specific business positions.
Innovativeness is used as an indicator to reflect a firm’s tendency for engaging itself in supporting new ideas, practices, and creative systems, which may result in new processes, services, or technologies (Lumpkin & Dess, 1996). Although the major portion of the existing literature on innovation has focused on technology innovation can occur in any area of the business activities, which may include human resources, management processes, visual merchandising, promotion, and other aspects necessary to run any small business. Schumpeter (1942) was among the first who highlights the importance of innovations and offered his ideas in the form of “creative destruction” that is related to the fundamental innovation process. New business ventures can be created by taking resources from existing companies (Lumpkin & Dess, 1996). Previous EO studies show a significant relationship between innovativeness and business performance, which are strongly correlated with each other (Rauch et al., 2009). A high level of innovativeness promotes a firm’s performance in an uncertain and dynamic environment (Kreiser and Davis, 2010). FBs may be prominent in the business community due to their innovativeness and sometimes their prominence pushes them to be known as innovative in the business community where they operate. Family prominence as a social resource plays an important role in FBs to be innovative which eventually contributes economically. On the other hand, family enrichment and family continuity, as resources, may contribute negatively as incompetent family members may not bring innovativeness for business therefore these two social capital resources contribute negatively.

8. Conceptual Framework:

Fig 1

Conceptual model
On the left-hand side, FBs social capital resources i.e. family prominence, family continuity, and family enrichment are used as three independent variables (IVs) along with firm’s performance (return on sales) is used as a dependent variable (DV) whereas innovativeness may be used as a mediator. Family prominence has a positive impact on a firm’s performance while the remaining two IVs i.e. family continuity and family enrichment harm performance. Similarly, family prominence has a positive impact on innovativeness, and family continuity and family enrichment harm innovativeness. Family prominence is used considering economic benefits for the firm while family continuity and family enrichment are attached with non-economic decisions and based on emotions.
9. Conclusion
All these social capital resources are the compulsory part of family businesses some of them contributed positively and some negatively. Decision-makers must pay attention while dealing with these social resources before they consider them in any decision taken for the firm and they need to make sure to have no or minimal impact of some non-economic resources in the firm’s business affairs. This situation becomes challenging sometimes as family bonding get preference over economic decisions but if it is in the knowledge of the decision-makers, they may foresee the economic damages attached with these emotional decisions and may make necessary measure to overcome their impact. As these resources cannot be separated from the firm’s resource reserves therefore firms need to learn to live with them. One of the possible solutions to deal with this issue is to give priority to economic decisions at each stage without considering family attachments and affiliations so that the failure rate of the FBs may be minimized.

10. Future directions
This study suggests some possible areas to explore in the future in which empirical testing of the conceptual model is significant to get more reliable results. Literature does not talk much about those resources, which are self-born and become the essential part of business, which can be explored further. This study has identified some of the family attributes as the firm’s resources but there may be few more resources, which are exclusively available for family businesses for instance family risk-taking ability as a resource or family technology orientation.

References


Collis, D. J. (1994). Research note: how valuable are organizational capabilities?. Strategic management journal, 15(S1), 143-152.


STUDY ON TOURIST SATISFACTION IN LIANGSHAN PREFECTURE, CHINA

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ABSTRACT

Liangshan Prefecture, located in southwest China, makes use of its unique climate advantages and superior natural conditions to vigorously create a new four-in-one health industry pattern of "health care and living" committed to building an international health care tourism resort. This paper firstly constructs the index system of tourism satisfaction; secondly, conducts descriptive analysis, reliability test, validity test, factor analysis and regression analysis to further explore the influencing factors of tourist satisfaction. Finally, we put forward suggestions to improve tourism development of Liangshan Prefecture in China.

Keywords: Tourist satisfaction, Liangshan Prefecture, China

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1. Introduction

In 2020, faced with the severe and complicated situation at home and abroad, especially the severe impact of COVID-19, Liangshan Prefecture received 28,882,700 domestic tourists, a decrease of 40.13 percent, and the total tourism revenue of 27,507 million yuan, a decrease of 48.12 percent. This paper investigates tourist satisfaction of Liangshan and analyze the important factors that affect tourist satisfaction. Suggestions are made for the Liangshan government and tourism operators, as well as proposal of effective countermeasures for the recovery development of Liangshan tourism.

2. Literature Review

The research on tourist satisfaction has been quite mature, and the scholars' research includes the concept and connotation of tourist satisfaction, the influencing factors of tourist satisfaction, the evaluation system of tourist satisfaction, and the formation mechanism of tourist satisfaction. Among them, the influencing factors of tourist satisfaction and the evaluation system are studied the most.

Pizam (1978) targets Cape Cod waterfront visitors, proposing eight factors affecting visitor satisfaction, including beach, environment, catering facilities, accommodation facilities, degree of commercialization, recreation opportunities, cost and hospitality while Foster (1999) makes an overall evaluation of tourist satisfaction in terms of tourist attractions, transportation, food, service quality, price and culture. Bowen (2001) identified expectations, performance, inconsistency, characteristics, emotion and fairness as the six factors affecting visitor satisfaction. Akama (2003) believes that overall tourist satisfaction with a tourist destination is influenced both by the quality of products and services and by price and perceived value. Among them, the quality of products and services is the most
important influencing factor. Yoon and Uysal (2005) confirmed the relationship between tourist satisfaction and loyalty by establishing a tourism “thrust-pull” motivation model, and found that good products, services and other resources had a significant impact on tourist satisfaction, and that high tourist satisfaction will increase tourists' willingness to revisit. Sangjae (2011) found that the difference between visitor expectations and perceived quality would create satisfaction or dissatisfaction, tourist satisfaction is the premise of tourist loyalty. Sushila (2014) uses variance partial least squares and structural equation model to study the tourist satisfaction of rural tourism service quality and the regulatory role of previous experience between perceptual service and satisfaction.

3. Questionnaire on tourist satisfaction in Liangshan Prefecture

Based on the summary of the previous tourism satisfaction evaluation index system, this paper preliminarily establishes tourist satisfaction evaluation index, with 4 project levels, respectively, overall satisfaction, tourism environment, tourism elements, tourism management and service, and 19 measurement items. Each indicator and items are shown in the following table below. The five-point Likert is used in the survey, the number "1-5" respectively represents "very unsatisfactory", "less satisfactory", "general", "basic satisfaction" and "very satisfactory".

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Measurement item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction</td>
<td>What is your overall perception of the tour?</td>
</tr>
<tr>
<td></td>
<td>Would you like to revisit it?</td>
</tr>
<tr>
<td></td>
<td>Would you like to recommend the destination to others?</td>
</tr>
<tr>
<td>Tourism environment</td>
<td>Environmental sanitation conditions</td>
</tr>
<tr>
<td></td>
<td>Ecological conditions</td>
</tr>
<tr>
<td></td>
<td>Air quality</td>
</tr>
<tr>
<td></td>
<td>Environmental crowding conditions</td>
</tr>
<tr>
<td>Tourism elements</td>
<td>Infrastructure</td>
</tr>
<tr>
<td></td>
<td>Traffic convenience</td>
</tr>
<tr>
<td></td>
<td>Accommodation conditions</td>
</tr>
<tr>
<td></td>
<td>Catering features</td>
</tr>
<tr>
<td></td>
<td>Entertainment diversity</td>
</tr>
<tr>
<td></td>
<td>Shopping prices</td>
</tr>
<tr>
<td></td>
<td>Local characteristics</td>
</tr>
<tr>
<td>Tourism management and services</td>
<td>Tourism management norms</td>
</tr>
</tbody>
</table>
Table 1: Tourist satisfaction indicators.

<table>
<thead>
<tr>
<th>Tourism transaction norms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff service level</td>
</tr>
<tr>
<td>Friendship degree of the villagers</td>
</tr>
<tr>
<td>Tourism complaints and handling</td>
</tr>
</tbody>
</table>

4. Descriptive statistical analysis of the respondents

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49</td>
<td>41.9%</td>
</tr>
<tr>
<td>Female</td>
<td>68</td>
<td>58.1%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 18 years of age</td>
<td>3</td>
<td>2.6%</td>
</tr>
<tr>
<td>Age of 18-25</td>
<td>77</td>
<td>65.8%</td>
</tr>
<tr>
<td>Age of 26-45</td>
<td>32</td>
<td>27.4%</td>
</tr>
<tr>
<td>age of 46-65</td>
<td>4</td>
<td>3.4%</td>
</tr>
<tr>
<td>Over 65 years old</td>
<td>1</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior school and below</td>
<td>2</td>
<td>1.7%</td>
</tr>
<tr>
<td>High school</td>
<td>28</td>
<td>23.9%</td>
</tr>
<tr>
<td>The University</td>
<td>82</td>
<td>70.1%</td>
</tr>
<tr>
<td>Graduate students and above</td>
<td>5</td>
<td>4.3%</td>
</tr>
<tr>
<td><strong>Marriage status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>12</td>
<td>10.3%</td>
</tr>
<tr>
<td>Unmarried</td>
<td>105</td>
<td>89.7%</td>
</tr>
<tr>
<td><strong>Work of the visitors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company Staff</td>
<td>23</td>
<td>19.7%</td>
</tr>
<tr>
<td>Self-employed households</td>
<td>19</td>
<td>16.2%</td>
</tr>
<tr>
<td>Employees of government organs and public institutions</td>
<td>16</td>
<td>13.7%</td>
</tr>
<tr>
<td>Students</td>
<td>24</td>
<td>20.5%</td>
</tr>
<tr>
<td>Retired personnel</td>
<td>12</td>
<td>10.3%</td>
</tr>
<tr>
<td>Freelancer</td>
<td>14</td>
<td>12%</td>
</tr>
<tr>
<td>Educators</td>
<td>4</td>
<td>3.4%</td>
</tr>
<tr>
<td>Military personnel</td>
<td>5</td>
<td>4.3%</td>
</tr>
<tr>
<td>Others</td>
<td>23</td>
<td>19.7%</td>
</tr>
</tbody>
</table>
Tourist satisfaction of Liangshan Prefecture was investigated using questionnaires. A total of 121 questionnaires were distributed and 117 valid questionnaires were used in the analysis.

From the table above, the demographic characteristics of the respondents are as follows: women account for 58.1%, men 41.9%; 18-25 years, 65.8%, followed by 26.4%, 26-45, 27.4%; education, university 70.1%, secondary to high school 23.9%: unmarried 89.7%, married 10.3%; Occupation, company employees and students accounted for the highest 20%, followed by freelancers accounting for about 16%; average monthly income, 1001-5000 accounting for 47.9%, followed by 3001-5000 accounting for 26.5%; tourists from other places in the province 61.5%, followed by Outside of the province 25.6%. In terms of transportation for travel, approximately 31.6% travelled by buses, followed by 27.4% by car, with an equal proportion of trains and aircraft, both 20.5%; for travelling companions, up to 51.3% of traveling with friends, followed by 17.1%, and themselves, lovers and tour groups, all about 10%.
5. Satisfaction analysis of tourist tourists in Liangshan Prefecture

5.1 Data reliability test

The reliability of data is measured for answer consistency. By examining the results of respondent’s answer to the question, judge the consistency of the answer, the greater the fluctuating the answer, the lower the confidence, the better the consistency and the higher the reliability. This analysis adopts the Cronbach's alpha reliability coefficient method. The coefficient α is a coefficient between 0-1, and the higher the system value indicates the better the confidence. Empirically, if \( \alpha \geq 0.9 \), the scale intrinsic reliability is high; if \( 0.8 \leq \alpha \leq 0.9 \) is acceptable; If \( 0.7 \leq \alpha <0.8 \), the scale design is still of reference value; if \( \alpha <0.7 \), there is considered with the scale design, redesign should be considered. According to the reliability analysis results, the Cronbach’s alpha is 0.936, which proves high reliability.

Case Processing Summary

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid</td>
<td>117</td>
<td>100.0</td>
</tr>
<tr>
<td>Excluded(a)</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\(a\). Listwise deletion based on all variables in the procedure.

Reliability Statistics

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.936</td>
<td>19</td>
</tr>
</tbody>
</table>

Item Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your overall perception of the tour?</td>
<td>3.65</td>
<td>.780</td>
<td>117</td>
</tr>
<tr>
<td>Would you like to revisit it?</td>
<td>3.44</td>
<td>.803</td>
<td>117</td>
</tr>
<tr>
<td>Would you like to recommend the destination to others?</td>
<td>3.64</td>
<td>1.038</td>
<td>117</td>
</tr>
<tr>
<td>Environmental sanitation conditions</td>
<td>3.32</td>
<td>.837</td>
<td>117</td>
</tr>
<tr>
<td>Ecological conditions</td>
<td>3.54</td>
<td>.933</td>
<td>117</td>
</tr>
<tr>
<td>Air quality</td>
<td>3.62</td>
<td>.878</td>
<td>117</td>
</tr>
<tr>
<td>Environmental crowding conditions</td>
<td>3.38</td>
<td>.807</td>
<td>117</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>3.32</td>
<td>.690</td>
<td>117</td>
</tr>
<tr>
<td>Traffic convenience</td>
<td>3.13</td>
<td>.760</td>
<td>117</td>
</tr>
<tr>
<td>Accommodation conditions</td>
<td>3.26</td>
<td>.811</td>
<td>117</td>
</tr>
<tr>
<td>Item</td>
<td>Scale Mean if Item Deleted</td>
<td>Scale Variance if Item Deleted</td>
<td>Corrected Item-Total Correlation</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>What is your overall perception of the tour?</td>
<td>60.69</td>
<td>109.405</td>
<td>.705</td>
</tr>
<tr>
<td>Would you like to revisit it?</td>
<td>60.91</td>
<td>110.689</td>
<td>.603</td>
</tr>
<tr>
<td>Would you like to recommend the destination to others?</td>
<td>60.70</td>
<td>109.125</td>
<td>.522</td>
</tr>
<tr>
<td>Environmental sanitation conditions</td>
<td>61.03</td>
<td>110.922</td>
<td>.561</td>
</tr>
<tr>
<td>Ecological conditions</td>
<td>60.80</td>
<td>109.918</td>
<td>.548</td>
</tr>
<tr>
<td>Air quality</td>
<td>60.72</td>
<td>110.187</td>
<td>.573</td>
</tr>
<tr>
<td>Environmental crowding conditions</td>
<td>60.97</td>
<td>111.826</td>
<td>.530</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>61.03</td>
<td>110.732</td>
<td>.710</td>
</tr>
<tr>
<td>Traffic convenience</td>
<td>61.21</td>
<td>110.876</td>
<td>.629</td>
</tr>
<tr>
<td>Accommodation conditions</td>
<td>61.09</td>
<td>109.441</td>
<td>.673</td>
</tr>
<tr>
<td>Catering features</td>
<td>61.05</td>
<td>106.618</td>
<td>.757</td>
</tr>
<tr>
<td>Entertainment diversity</td>
<td>60.93</td>
<td>109.081</td>
<td>.676</td>
</tr>
<tr>
<td>Shopping prices</td>
<td>60.94</td>
<td>108.177</td>
<td>.694</td>
</tr>
<tr>
<td>Local characteristics</td>
<td>60.89</td>
<td>108.686</td>
<td>.645</td>
</tr>
</tbody>
</table>
Tourism management norms 61.01 110.319 .649 .932
Tourism transaction norms 61.07 107.633 .749 .930
Staff service level 61.06 109.729 .598 .933
Friendship degree of the villagers 60.99 107.629 .690 .931
Tourism complaints and handling 61.08 108.641 .664 .932

5.2 Data validity test
This paper uses SPSS24.0 software to test the validity of KMO and Bartlett.

(1) Test of overall satisfaction validity

KMO and Bartlett's Test

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | .703 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 110.273 |
| df | 3 |
| Sig. | .000 |

Communalities

| Initial | Extraction |
| What is your overall perception of the tour? | 1.000 | .676 |
| Would you like to revisit it? | 1.000 | .758 |
| Would you like to recommend the destination to others? | 1.000 | .717 |

Extraction Method: Principal Component Analysis.

Total Variance Explained

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>2.151</td>
<td>71.695</td>
</tr>
<tr>
<td>2</td>
<td>.482</td>
<td>16.066</td>
</tr>
<tr>
<td>3</td>
<td>.367</td>
<td>12.239</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Component Matrix

<table>
<thead>
<tr>
<th>Component</th>
<th>Component Score Coefficient Matrix</th>
<th>Extraction Method: Principal Component Analysis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Extraction Method: Principal Component Analysis.</td>
</tr>
<tr>
<td>What is your overall perception of the tour?</td>
<td>.822</td>
<td>Rotation Method: Varimax with Kaiser Normalization.</td>
</tr>
<tr>
<td>Would you like to revisit it?</td>
<td>.871</td>
<td></td>
</tr>
<tr>
<td>Would you like to recommend the destination to others?</td>
<td>.847</td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Environmental sanitation conditions | .583
Ecological conditions | .673
Air quality | .745
Environmental crowding conditions | .426
<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>1.000</th>
<th>.714</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic convenience</td>
<td>1.000</td>
<td>.634</td>
</tr>
<tr>
<td>Accommodation conditions</td>
<td>1.000</td>
<td>.589</td>
</tr>
<tr>
<td>Catering features</td>
<td>1.000</td>
<td>.684</td>
</tr>
<tr>
<td>Entertainment diversity</td>
<td>1.000</td>
<td>.556</td>
</tr>
<tr>
<td>Shopping prices</td>
<td>1.000</td>
<td>.668</td>
</tr>
<tr>
<td>Local characteristics</td>
<td>1.000</td>
<td>.612</td>
</tr>
<tr>
<td>Tourism management norms</td>
<td>1.000</td>
<td>.676</td>
</tr>
<tr>
<td>Tourism transaction norms</td>
<td>1.000</td>
<td>.681</td>
</tr>
<tr>
<td>Staff service level</td>
<td>1.000</td>
<td>.683</td>
</tr>
<tr>
<td>Friendship degree of the villagers</td>
<td>1.000</td>
<td>.561</td>
</tr>
<tr>
<td>Tourism complaints and handling</td>
<td>1.000</td>
<td>.755</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
<td>Cumulative %</td>
</tr>
<tr>
<td>1</td>
<td>7.857</td>
<td>49.105</td>
<td>49.105</td>
</tr>
<tr>
<td>2</td>
<td>1.346</td>
<td>8.413</td>
<td>57.518</td>
</tr>
<tr>
<td>3</td>
<td>1.037</td>
<td>6.483</td>
<td>64.001</td>
</tr>
<tr>
<td>4</td>
<td>.867</td>
<td>5.416</td>
<td>69.417</td>
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<tr>
<td>5</td>
<td>.694</td>
<td>4.337</td>
<td>73.754</td>
</tr>
<tr>
<td>6</td>
<td>.611</td>
<td>3.816</td>
<td>77.570</td>
</tr>
<tr>
<td>7</td>
<td>.539</td>
<td>3.370</td>
<td>80.940</td>
</tr>
<tr>
<td>8</td>
<td>.511</td>
<td>3.193</td>
<td>84.133</td>
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<tr>
<td>9</td>
<td>.477</td>
<td>2.981</td>
<td>87.115</td>
</tr>
<tr>
<td>10</td>
<td>.447</td>
<td>2.792</td>
<td>89.907</td>
</tr>
<tr>
<td>11</td>
<td>.367</td>
<td>2.294</td>
<td>92.201</td>
</tr>
<tr>
<td>12</td>
<td>.332</td>
<td>2.077</td>
<td>94.278</td>
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<tr>
<td>13</td>
<td>.284</td>
<td>1.776</td>
<td>96.054</td>
</tr>
<tr>
<td>14</td>
<td>.231</td>
<td>1.446</td>
<td>97.500</td>
</tr>
</tbody>
</table>
**Component Matrix**

<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental sanitation conditions</td>
<td>.606</td>
<td>.463</td>
<td>.031</td>
</tr>
<tr>
<td>Ecological conditions</td>
<td>.576</td>
<td>.498</td>
<td>.306</td>
</tr>
<tr>
<td>Air quality</td>
<td>.617</td>
<td>.598</td>
<td>.081</td>
</tr>
<tr>
<td>Environmental crowding conditions</td>
<td>.609</td>
<td>.178</td>
<td>.154</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>.764</td>
<td>-.108</td>
<td>-.344</td>
</tr>
<tr>
<td>Traffic convenience</td>
<td>.699</td>
<td>-.118</td>
<td>-.364</td>
</tr>
<tr>
<td>Accommodation conditions</td>
<td>.735</td>
<td>-.150</td>
<td>-.163</td>
</tr>
<tr>
<td>Catering features</td>
<td>.789</td>
<td>.000</td>
<td>-.246</td>
</tr>
<tr>
<td>Entertainment diversity</td>
<td>.744</td>
<td>-.032</td>
<td>-.038</td>
</tr>
<tr>
<td>Shopping prices</td>
<td>.747</td>
<td>-.145</td>
<td>-.298</td>
</tr>
<tr>
<td>Local characteristics</td>
<td>.707</td>
<td>.207</td>
<td>-.264</td>
</tr>
<tr>
<td>Tourism management norms</td>
<td>.676</td>
<td>-.386</td>
<td>.265</td>
</tr>
<tr>
<td>Tourism transaction norms</td>
<td>.785</td>
<td>.002</td>
<td>.256</td>
</tr>
<tr>
<td>Staff service level</td>
<td>.661</td>
<td>-.395</td>
<td>.300</td>
</tr>
<tr>
<td>Friendship degree of the villagers</td>
<td>.738</td>
<td>-.110</td>
<td>.063</td>
</tr>
<tr>
<td>Tourism complaints and handling</td>
<td>.711</td>
<td>-.256</td>
<td>.429</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

a. 3 components extracted.
Rotated Component Matrix\textsuperscript{a}

<table>
<thead>
<tr>
<th>Component</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental sanitation conditions</td>
<td>.306</td>
<td>.108</td>
<td>.691</td>
</tr>
<tr>
<td>Ecological conditions</td>
<td>.079</td>
<td>.245</td>
<td>.779</td>
</tr>
<tr>
<td>Air quality</td>
<td>.255</td>
<td>.072</td>
<td>.821</td>
</tr>
<tr>
<td>Environmental crowding conditions</td>
<td>.263</td>
<td>.341</td>
<td>.490</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>.776</td>
<td>.270</td>
<td>.197</td>
</tr>
<tr>
<td>Traffic convenience</td>
<td>.748</td>
<td>.227</td>
<td>.151</td>
</tr>
<tr>
<td>Accommodation conditions</td>
<td>.631</td>
<td>.390</td>
<td>.197</td>
</tr>
<tr>
<td>Catering features</td>
<td>.704</td>
<td>.287</td>
<td>.326</td>
</tr>
<tr>
<td>Entertainment diversity</td>
<td>.527</td>
<td>.410</td>
<td>.333</td>
</tr>
<tr>
<td>Shopping prices</td>
<td>.737</td>
<td>.309</td>
<td>.171</td>
</tr>
<tr>
<td>Local characteristics</td>
<td>.629</td>
<td>.118</td>
<td>.450</td>
</tr>
<tr>
<td>Tourism management norms</td>
<td>.317</td>
<td>.753</td>
<td>.089</td>
</tr>
<tr>
<td>Tourism transaction norms</td>
<td>.334</td>
<td>.599</td>
<td>.460</td>
</tr>
<tr>
<td>Staff service level</td>
<td>.283</td>
<td>.772</td>
<td>.083</td>
</tr>
<tr>
<td>Friendship degree of the villagers</td>
<td>.462</td>
<td>.512</td>
<td>.292</td>
</tr>
<tr>
<td>Tourism complaints and handling</td>
<td>.200</td>
<td>.806</td>
<td>.257</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

\textsuperscript{a} Rotation converged in 6 iterations.

Component Transformation Matrix

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.664</td>
<td>.560</td>
<td>.496</td>
</tr>
<tr>
<td>2</td>
<td>-.160</td>
<td>-.542</td>
<td>.825</td>
</tr>
<tr>
<td>3</td>
<td>-.731</td>
<td>.627</td>
<td>.270</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
The validity test results show that the KMO value is 0.903, and the Bartlett spherical degree test is significantly less than 0.001. According to the composition matrix of the rotating factors, it can conclude that component 1 represents the tourism elements, component 2 represent the tourism management and service, and component 3 represent the tourism environment.

5.3 Regression analysis

Using regression analysis to study linear or nonlinear relationships between various existing correlation variables, this section uses multivariate linear regression to study the impact of various factors on tourism satisfaction. The regression results are shown in the following table:

<table>
<thead>
<tr>
<th>Component Score Coefficient Matrix</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Environmental sanitation conditions</td>
<td>-.026</td>
</tr>
<tr>
<td>Ecological conditions</td>
<td>-.226</td>
</tr>
<tr>
<td>Air quality</td>
<td>-.076</td>
</tr>
<tr>
<td>Environmental crowding conditions</td>
<td>-.078</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>.320</td>
</tr>
<tr>
<td>Traffic convenience</td>
<td>.329</td>
</tr>
<tr>
<td>Accommodation conditions</td>
<td>.195</td>
</tr>
<tr>
<td>Catering features</td>
<td>.240</td>
</tr>
<tr>
<td>Entertainment diversity</td>
<td>.093</td>
</tr>
<tr>
<td>Shopping prices</td>
<td>.291</td>
</tr>
<tr>
<td>Local characteristics</td>
<td>.221</td>
</tr>
<tr>
<td>Tourism management norms</td>
<td>-.084</td>
</tr>
<tr>
<td>Tourism transaction norms</td>
<td>-.114</td>
</tr>
<tr>
<td>Staff service level</td>
<td>-.109</td>
</tr>
<tr>
<td>Friendship degree of the villagers</td>
<td>.031</td>
</tr>
<tr>
<td>Tourism complaints and handling</td>
<td>-.212</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.
Variables Entered/Removed

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2</td>
<td></td>
<td>Enter</td>
</tr>
</tbody>
</table>

a. Dependent Variable: REGR factor score 1 for analysis 1
b. All requested variables entered.

Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.678a</td>
<td>.460</td>
<td>.445</td>
<td>.74483364</td>
<td>1.781</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2
b. Dependent Variable: REGR factor score 1 for analysis 1

ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>53.310</td>
<td>3</td>
<td>17.770</td>
<td>32.031</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>62.690</td>
<td>113</td>
<td>.555</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>116.000</td>
<td>116</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: REGR factor score 1 for analysis 1
b. Predictors: (Constant), REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2

Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.214E-16</td>
<td>.069</td>
</tr>
<tr>
<td></td>
<td>REGR factor score 1 for analysis 2</td>
<td>.406</td>
<td>.069</td>
</tr>
<tr>
<td></td>
<td>REGR factor score 2 for analysis 2</td>
<td>.436</td>
<td>.069</td>
</tr>
</tbody>
</table>
Collinearity Diagnostics

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Eigenvalue</th>
<th>Condition Index</th>
<th>Variance Proportions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>REGR factor score 1 for analysis 2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1.000</td>
<td>1.000</td>
<td>.00</td>
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<tr>
<td>2</td>
<td>1</td>
<td>1.000</td>
<td>1.000</td>
<td>1.00</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1.000</td>
<td>1.000</td>
<td>.00</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1.000</td>
<td>1.000</td>
<td>.00</td>
</tr>
</tbody>
</table>

a. Dependent Variable: REGR factor score 1 for analysis 1

Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.214E-16</td>
<td>.069</td>
</tr>
<tr>
<td></td>
<td>REGR factor score 1 for analysis 2</td>
<td>.406</td>
<td>.069</td>
</tr>
<tr>
<td></td>
<td>REGR factor score 2 for analysis 2</td>
<td>.436</td>
<td>.069</td>
</tr>
<tr>
<td></td>
<td>REGR factor score 3 for analysis 2</td>
<td>.323</td>
<td>.069</td>
</tr>
</tbody>
</table>

a. Dependent Variable: REGR factor score 1 for analysis 1

Residuals Statistics

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Value</td>
<td>-1.6316482</td>
<td>1.8434309</td>
<td>.0000000</td>
<td>.67791632</td>
<td>117</td>
</tr>
<tr>
<td>Residual</td>
<td>-2.71797943</td>
<td>1.81331730</td>
<td>.0000000</td>
<td>.73513908</td>
<td>117</td>
</tr>
<tr>
<td>Std. Predicted Value</td>
<td>-2.407</td>
<td>2.719</td>
<td>.000</td>
<td>1.000</td>
<td>117</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-3.649</td>
<td>2.435</td>
<td>.000</td>
<td>.987</td>
<td>117</td>
</tr>
</tbody>
</table>

a. Dependent Variable: REGR factor score 1 for analysis 1
Histogram

Dependent Variable: REGR factor score 1 for analysis 1

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: REGR factor score 1 for analysis 1
According to the data analysis output, the closer the VIF value is to 1, the less multiple collinearity between the variables. Through the residual map, it can also see that the model can pass the residual test. By observing the p value of each factor on satisfaction, they have significant positive influence on satisfaction. According to the Beta value of standardization coefficient Beta, the weight of the influence of component 1 tourism elements on overall tourism satisfaction is 0.406, the impact weight of tourism management and service on overall tourism satisfaction is 0.436, and the impact weight of component 3 tourism environment on the overall satisfaction of tourism is 0.323.

6. **Suggestions on improving the health care tourism satisfaction in Liangshan Prefecture, China**

6.1 **Strengthen the tourism elements**

According to the previous analysis, tourists at Liangshan Prefecture is most dissatisfied with transportation, accounting for 38.5%, followed by shopping accounting for 10%. Therefore, in terms of transportation, we should strengthen the road construction of scenic spots and provide more direct tourist routes to create convenience for tourists' travel and shopping. In tourist attractions, some transportation mode with characteristics, such as horse riding, carriage and sedan chair, can be developed according to the characteristics of the scenic spots, to increase the experience of tourists. In terms of shopping, in addition to the sales of characteristic agricultural products in Liangshan Prefecture, we should also vigorously develop embroidery and other handicrafts with Liangshan ethnic characteristics, enrich product types and improve the quality of tourism products. In terms of catering, we should give full play to the advantages of green and pollution-free food in Liangshan mountainous areas, build Liangshan local specialties and web celebrity restaurants, and increase repeat customers. In terms of accommodation, we should focus on the establishment of a good reputation, especially the home stay in tourist attractions. In terms of entertainment, it is necessary to combine the characteristics of Liangshan Prefecture to enhance the sense of tourist experience, such as music festivals, fruit picking festival, torch festival and other entertainment activities. In terms of infrastructure, attention should be paid to the construction of tourist distribution centers, improve the tourism service system, tourism identification system and tourism information platform, and expand parking lots and toilets in tourist scenic spots.
6.2 Improve tourism management and service quality

Special tourism management institutions should be established to make the tourism management of Liangshan Prefecture more standardized. In most of the tourist attractions in Liangshan Prefecture, the staff and service personnel are mainly from local farmers, and the education degree is generally not high. Relevant departments should organize professional training for the management personnel and service personnel of the tourist scenic spots to provide standardized services for tourists. Tourism complaints and handling are an important factor affecting tourist satisfaction. Government departments should display the complaint hotline number in prominent places of scenic spots and handle tourist complaints in a timely and proper manner. In addition, we should strictly control the tourism transaction to create a safe and convenient payment environment for tourists.

6.3 Improve the tourism environment

The purpose of tourists coming to Liangshan Prefecture is to have close contact with the Liangshan mountains and nature, enjoy the clean air of the plateau area, and enjoy the beautiful ecological environment of Liangshan. For the governance of the tourism environment of Liangshan Prefecture, first, strengthen the governance of the sanitary environment of the scenic spots, appropriately increase the sanitation facilities and sanitation staff, to provide tourists with a clean and comfortable sanitation environment for tourism. Second, adhere to the road of ecological tourism. In the process of developing tourism, it is strictly prohibited from environmental pollution and destruction of natural resources, properly use the original natural ecological resources of Liangshan Prefecture, and expand the tourism function on the premise of creating a good ecological environment. Third, the regional conditions of Liangshan Prefecture are far away from the big cities, in contrast to the crowded and noisy cities. The unique quiet and beautiful ecological environment of Liangshan Prefecture is the root of the development of health tourism in Liangshan Prefecture. Therefore, to create a comfortable and leisure space for tourists, it is necessary to strengthen the control of the number of tourists in tourist attractions and cannot make them exceed the local environmental carrying capacity.

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References


FINANCIAL SUPPORT FOR TOURISM DEVELOPMENT IN LIANGSHAN PREFECTURE, CHINA

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ABSTRACT

Liangshan Prefecture is located in southwest China. Liangshan Prefecture uses its unique climate advantages and superior natural conditions, relying on the construction of a seasonal headquarters base, and vigorously builds an international tourist attraction. This article first investigates the current situation of financial support for tourism development in Liangshan Prefecture, and analyzes the plight of financial support for tourism in Liangshan Prefecture; secondly, the VAR model is used to further study the relationship between tourism development and financial support in Liangshan Prefecture. The data uses ADF test (Augment Dichey Fuller test), cointegration test (Engel-Granger test), Granger test of causality, impulse response analysis and variance analysis. Finally, it puts forward the countermeasures and suggestions to improve the financial support for the development of tourism in Liangshan Prefecture, such as increasing government support, strengthening the financial role of policy banks and commercial banks, improving the quality of financial services, and exploring other financial support paths.

Keywords: Financial support, tourism development, VAR model, Liangshan Prefecture, China

1. Introduction

Liangshan prefecture located in southwest China. Taking advantage of its unique climate and natural conditions, Liangshan tourism has become an important engine for economic growth, an important driving force for transformation and development, and an important support for poverty alleviation. In 2020, the tourism industry in Liangshan Prefecture experienced negative growth due to the COVID-19 pandemic. In order to promote the recovery and development of tourism, the Government Department of Liangshan Prefecture increased support to the tourism industry, introduced domestic and foreign well-known tourism enterprises, and created a new situation of tourism development in the whole prefecture.

2. Literature Review

In recent years, the status of finance in the national economy has been increasing, and scholarly research on financial support in the tourism industry has also gradually increased. It mainly includes two aspects:

2.1 Study on the relationship between financial support and the development of the tourism industry.

West G.R(1992) used the input-output method to conclude that increasing the investment of financial funds in the tourism industry can have a positive and significant impact on the tourism industry. Wang et al. (2007) put forward that financial support is crucial to driving the growth of Lijiang tourism revenue and GDP. Rao et al. (2010) have proved a significant positive relationship between financial support and the development of the tourism industry in Jiangxi Province. Yang (2013)
concluded that the capital market financing in the eastern and central region has significantly improved the tourism investment efficiency; the traditional bank credit financing model in the western region still dominates the development of tourism. Yang et al. (2014) made a comparative analysis of the dynamic effect of financial support for tourism development in Guizhou and Zhejiang regions, and believed that the financial support for the development of tourism industry between the two local regions was significantly different.

2.2 Case study on financial problems and countermeasures restricting the development of tourism.

Sun et al. (2008) took Jiaozuo City as the study object, Hu et al. (2012) took Xinjiang Cochai Scenic Area as an example, Fu et al. (2014) took Sichuan as an example, Dong et al. (2015) took Jinzhong City as the study object, Lin et al. (2017) took Yanshan-Taishan Mountain as the study object, analyzed the problems existing in financial support for the development of the tourism industry in the above regions, including financing difficulties in the tourism industry, single financial products and services, and imperfect supporting policies. It also put forward expanding the financing channels of tourism enterprises, encouraging financial innovation, and improving the financial policies of the tourism industry to promote the effective integration of finance and tourism.

3. Current situation of financial support for the development of tourism in Liangshan Prefecture

During the "13th Five-Year Plan" period, the prefectural Party committee and the prefectural government will fully implement the promotion strategy of financial supporting high-quality scenic spots, and establish the international brand image and core competitiveness. In 2018, the strategy of "building financial support tourism resources aggregation" aims to cultivate the tourism industry in Liangshan Prefecture into a strategic pillar industry of the economic development of Liangshan. However, there are the following deficiencies in Liangshan financial support for the development of the tourism industry:

(1) At present, Liangshan Prefecture government has not invested enough investment in the improvement of health support tourism infrastructure, and the shortage of special funds and unreasonable fund allocation of financial support health support tourism industry still exist.

(2) In the development of tourism, social capital investment is relatively low, the investment potential of all parties of the society needs to be explored, and the proportion of market direct investment and financing is low, which leads to an unreasonable and unbalanced trend of direct financing and investment development of the tourism industry.

(3) Low capital investment efficiency of tourism development, there are problems of insufficient capital stock assets, insufficient local financial cooperation and innovation, unreasonable financing structure, and low return on capital.

(4) Tourism investment funds have few financing channels, a single form of social capital financing, and lack the ability to mobilize the vitality of other financial investment in the market.

4. Empirical analysis of financial support of tourism in Liangshan Prefecture

This chapter further studies the relationship between tourism development and financial support in Liangshan Prefecture. The EViews software is used to study the relationship between tourism development and financial support in Liangshan Prefecture. The data is analyzed using ADF test (Augment Dickey Fuller test), co-integration test (Engel-Granger test), Granger test of causality, impulse response analysis and variance analysis.

4.1 Variable selection

Development index of tourism: This paper uses two indicators of total domestic tourism income and the number of tourists people to generally reflect the development of tourism in Liangshan Prefecture, recorded as DTI and NTP respectively.
Financial support indicators: This paper adopts the deposit balance and loan balance of various financial institutions in Liangshan Prefecture as the indicators of financial support. The better the financial development, the greater the financial support, recorded as BD and LB respectively.

4.2 Data processing
The data of the above four indicators for nearly 17 years are all derived from the Statistical Yearbook of Liangshan Prefecture. Because the domestic tourism income of Liangshan Prefecture and the balance of year-end deposit and loan in Liangshan Prefecture are the nominal value without excluding the price level changes, which cannot reflect the actual situation. This paper uses the consumer price index of Liangshan Prefecture to convert the index into base CPI, to eliminate the influence of price level changes:

The actual domestic tourism income of Liangshan Prefecture is DTI1:
DTI1=DTI/CPI*100

The actual year-end deposit balance of financial institutions in Liangshan Prefecture is BD1:
BD1=BD/CPI*100

The actual year-end loan balance of financial institutions in Liangshan Prefecture is LB1:
LB1=LB/CPI*100

In order to avoid the isovariance of the data, the article takes the natural logarithm of the data first, so the natural logarithms for each index respectively, LnDTI1, LnNTP, LnBD1, LnLB1.

4.3 Empirical analysis
(1) ADF inspection
This paper adopts the time series data. In most cases, it is unstable. In order to eliminate the pseudo-regression problem caused by the time series instability, this paper uses the ADF test to test whether the LnDTI1, LnNTP, LnBD1, LnLB1 time series data is stable, and the test structure is as follows:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Inspection type</th>
<th>ADF</th>
<th>prob</th>
<th>stable or not</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnDTI1</td>
<td>(C,T,3)</td>
<td>-1.001337</td>
<td>0.7192</td>
<td>not</td>
</tr>
<tr>
<td>LnNTP</td>
<td>(C,T,0)</td>
<td>-0.929422</td>
<td>0.7511</td>
<td>not</td>
</tr>
<tr>
<td>LnBD1</td>
<td>(C,T,1)</td>
<td>-1.058784</td>
<td>0.7027</td>
<td>not</td>
</tr>
<tr>
<td>LnLB1</td>
<td>(C,T,0)</td>
<td>-0.381881</td>
<td>0.8907</td>
<td>not</td>
</tr>
<tr>
<td>△LnDTI1</td>
<td>(C,T,3)</td>
<td>-3.970496</td>
<td>0.0128</td>
<td>stable</td>
</tr>
<tr>
<td>△LnNTP</td>
<td>(N,N,0)</td>
<td>-2.997183</td>
<td>0.0580</td>
<td>stable</td>
</tr>
<tr>
<td>△LnBD1</td>
<td>(N,N,0)</td>
<td>-5.826269</td>
<td>0.0003</td>
<td>stable</td>
</tr>
<tr>
<td>△LnLB1</td>
<td>(N,N,0)</td>
<td>-5.199606</td>
<td>0.0010</td>
<td>stable</td>
</tr>
</tbody>
</table>

Note: The C and T in the test formula (C,T,K) respectively indicate whether the test contains constant and time trend items, N means not, and K refers to the lag order.

According to the ADF test results in the table, the LnDTI1, LnNTP, LnBD1, LnLB1 time series data are non-stable time series, but their series after the first order difference are stable and first order single consolidation sequence, which meet the conditions of E-G two-step co-integration test.

(2) E-G two-step co-integration test
Individual variables are non-stable, but their linear combinations may be stable, and the cointegration test is used to judge whether a linear combination of a set of nonstationary sequences is stable. First estimate a least squares regression equation and then output the stationarity test of the residual as follows:
1 Cointegrating Equation(s):  

Log likelihood: 67.97566716402148

Normalized cointegrating coefficients (standard error in parentheses)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNDTI1</td>
<td>-0.179285</td>
<td>0.072140</td>
</tr>
<tr>
<td>LNNTP</td>
<td>-5.701863</td>
<td>0.222790</td>
</tr>
<tr>
<td>LNBD1</td>
<td>3.782732</td>
<td>0.194831</td>
</tr>
<tr>
<td>LNLB1</td>
<td>1</td>
<td>0.072140</td>
</tr>
</tbody>
</table>

Based on the cointegration test results, we can obtain the consolidation equation as follows:

\[ \text{LnDTI1} = -0.179285 \text{LnNTP} - 5.701863 \text{LnBD1} + 3.782732 \text{LnLB1} \]

(3) Granger test of causality

In order to clarify the causal relationship between the variables, this paper adopts the Granger causality test, which can be used to test whether all the lag terms of one variable have an impact on the current values of the other variables. If the effect is significant, it indicates that the variable has a Granger causal relation for the other variables. The inspection results are shown in the following table:

**Dependent variable: LNDTI1**

<table>
<thead>
<tr>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNNTP</td>
<td>2.114936062...</td>
<td>2</td>
<td>0.347334137...</td>
</tr>
<tr>
<td>LNBD1</td>
<td>7.822931607...</td>
<td>2</td>
<td>0.020011147...</td>
</tr>
<tr>
<td>LNLB1</td>
<td>0.327085828...</td>
<td>2</td>
<td>0.849130058...</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td><strong>22.82804426...</strong></td>
<td><strong>6</strong></td>
<td><strong>0.000856164...</strong></td>
</tr>
</tbody>
</table>

**Dependent variable: LNNTP**

<table>
<thead>
<tr>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNDTI1</td>
<td>6.849252394...</td>
<td>2</td>
<td>0.032561450...</td>
</tr>
<tr>
<td>LNBD1</td>
<td>6.588400391...</td>
<td>2</td>
<td>0.037097704...</td>
</tr>
<tr>
<td>LNLB1</td>
<td>1.786656717...</td>
<td>2</td>
<td>0.409291215...</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td><strong>19.72591584...</strong></td>
<td><strong>6</strong></td>
<td><strong>0.003098152...</strong></td>
</tr>
</tbody>
</table>

**Dependent variable: LNBD1**

<table>
<thead>
<tr>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNDTI1</td>
<td>5.942011898...</td>
<td>2</td>
<td>0.051251727...</td>
</tr>
<tr>
<td>LNNTP</td>
<td>1.882276008...</td>
<td>2</td>
<td>0.390183552...</td>
</tr>
<tr>
<td>LNLB1</td>
<td>4.206463016...</td>
<td>2</td>
<td>0.122061347...</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td><strong>9.945676666...</strong></td>
<td><strong>6</strong></td>
<td><strong>0.126958412...</strong></td>
</tr>
</tbody>
</table>

**Dependent variable: LNLB1**

<table>
<thead>
<tr>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNDTI1</td>
<td>11.68721486...</td>
<td>2</td>
<td>0.002898368...</td>
</tr>
<tr>
<td>LNNTP</td>
<td>9.025551305...</td>
<td>2</td>
<td>0.010967974...</td>
</tr>
<tr>
<td>LNBD1</td>
<td>22.11596897...</td>
<td>2</td>
<td>1.576080352...</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td><strong>54.22850149...</strong></td>
<td><strong>6</strong></td>
<td><strong>6.634415239...</strong></td>
</tr>
</tbody>
</table>
In general, the smaller the P value in the table, the stronger the existence of Granger causality. The probability values in the table show: LnBD1 and LnDTI1 are mutual Granger reasons, and the deposit balance of financial institutions and total tourism income are causal to each other. LnBD1 and LnNTP have a one-way causal relationship, and the financial institution deposit balance is the Granger reason for the number of tourists, and the number of tourists is not the Granger reason for the deposit balance of the financial institutions. LnDTI1, LnNTP and LnLB1 have a one-way causal relationship, total travel income and the number of visitors is Granger reasons for the loan balance of financial institutions, finance The institutional loan balance is not a Granger reason for the total travel revenue and the number of tourists.

To sum up, the finance of Liangshan Prefecture has a positive role in promoting the development of tourism in Liangshan Prefecture. The more financial institutions deposit, the more conducive to the increase of total tourism income and tourists of Liangshan Prefecture. In turn, the development of tourism in Liangshan Prefecture can promote the increase of loans from financial institutions.

(4) Stability test of the VAR model

<table>
<thead>
<tr>
<th>Root</th>
<th>Modulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.939721 - 0.167901i</td>
<td>0.954602846862199...</td>
</tr>
<tr>
<td>0.939721 + 0.167901i</td>
<td>0.954602846862199...</td>
</tr>
<tr>
<td>0.546009 - 0.696506i</td>
<td>0.885382457450872...</td>
</tr>
<tr>
<td>0.546009 + 0.696506i</td>
<td>0.885382457450872...</td>
</tr>
<tr>
<td>-0.466383 - 0.523561i</td>
<td>0.701163357909088...</td>
</tr>
<tr>
<td>-0.466383 + 0.523561i</td>
<td>0.701163357909088...</td>
</tr>
<tr>
<td>-0.184832 - 0.234019i</td>
<td>0.298208197246917...</td>
</tr>
<tr>
<td>-0.184832 + 0.234019i</td>
<td>0.298208197246917...</td>
</tr>
</tbody>
</table>

No root lies outside the unit circle.
VAR satisfies the stability condition.

VAR is a model based on the statistical nature of data. All current variables in the model conduct regression analysis of several lag variables of all variables. In this paper, the stability of the VAR model is determined as follows:

(5) Impulse response analysis

Since there are many coefficients in the VAR model, each single coefficient reflects only one local relation and does not reflect a comprehensive dynamical process. In this case, the VAR pulse response function is able to fully reflect the dynamic relations between the various variables. We do the pulse response analysis of LnDTI1, LnNTP, LnBD1, LnLB1, and the output results are as shown in the following figure, and the red dotted line is not all more than 0 or less than 0, so it is not certain that the impact response is completely positive or negative.
(6) Variance analysis

The variance decomposition decomposes the variance of a variable in the VAR system onto the various perturbation terms. The variance decomposition provides the relative degree of each disturbance factor affecting the VAR model: ① Over time, the impact contribution of financial institutions' deposits and loans to tourism income will gradually increase; ② Over time, the impact contribution of financial institutions' deposits and loans on the number of tourists will gradually increase; ③ Over time, the impact contribution of the tourism population to the deposit of financial institutions has gradually increased, while the impact contribution of the total tourism income to the deposit of financial institutions has gradually decreased. ④ Over time, the impact contribution of tourism population to financial institution loans gradually increased, while the impact contribution of total tourism income to financial institution loans gradually decreased.

To sum up, over time, the impact contribution of deposits and loans from financial institutions on tourism income and the number of tourists will gradually increase in Liangshan Prefecture. In addition, the impact contribution of tourism development on the deposit of financial institutions will gradually increase, while the impact contribution to financial institutions' loans will gradually decrease.
5. Financial support for the development of tourism suggestions in Liangshan Prefecture

5.1 Increase the financial budget for tourism

The quality of infrastructure and supporting service facilities directly affects the development of tourism. Therefore, the government should increase the fiscal budget for the construction of infrastructure and supporting service facilities. Liangshan Prefecture is a deeply poverty-stricken area in China. The government departments should actively strive for the national poverty alleviation funds used to support tourism. For example, the "work relief funds" in the national poverty alleviation funds can be used for the road construction of health care scenic spots to provide convenient transportation conditions for tourists.

5.2 Increase the support of policy banks for tourism

China Development Bank is a national policy bank, which is the most closely related to the development of the tourism industry. One of the important ways to solve the shortage of funds is to increase the assistance of policy banks to the tourism industry of Liangshan Prefecture. The State Development Bank's support for tourism is mainly provided in the form of low-interest loans, for the upgrading of tourism infrastructure in poor areas and the construction of major tourism projects.

5.3 Increase credit support for commercial banks

Financial institutions represented by commercial banks are important participants in the market, which not only provide financial support for tourism enterprises, but also provide convenient financial services for tourism enterprises and tourists. Commercial banks are an important path for tourism enterprises to obtain indirect financing. The government should introduce relevant policies to encourage commercial banks to increase their credit investment in tourism enterprises, so as to solve the capital bottlenecks.
5.4 Explore other financial support paths

The government should cooperate with tourism enterprises to actively explore other ways such as private finance and Internet finance. Private funds are scattered but large in amount, and the flexibility of capital is its main advantage. Tourism enterprises can obtain the support of private finance through legal channels, and gather more idle funds together to invest in tourism. Internet finance is flexible and avoids the time constraints of tourism enterprises to obtain the funds needed. With the help of the Internet, tourism enterprises obtain development funds through micro-credit, crowdfunding and developing tourism financial products to solve the financial problems.

5.5 Improve the quality of financial services

High-quality financial services will bring tourists a good user experience and drive their psychological demand for consumption. Financial institutions should provide convenient financial services for tourism enterprises and tourists, and improve the quality of financial services. For example, innovative payment tools to bring convenience to tourists' consumption; provide tourists with tourism financial products to meet their personalized needs.

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FOOD INSECURITY AMONG B40 GROUP AND FOOD WASTAGE IN MALAYSIA

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ABSTRACT

Food as a fundamental need for people globally has become a universal concern as the world population increases. The technological advancement, Research and Development have helped economies worldwide to be efficient enough in fulfilling the food consumption. Unfortunately, the world still faces food crisis such as hunger, food insecurity, food wastage and so on, particularly among least developed countries and developing countries like Malaysia. In line with this, Sustainable Development Goal 2, established by the United Nations in 2015, aims to end hunger, achieve food security, improved nutrition and promote sustainable agriculture. In the context of Malaysia, the country once known as an agricultural country, evolved and transformed its economic structure into more diversified and constantly moving towards industrialisation and digitalisation. Even though various strategies and policies being implemented to make agriculture as a competitive industry, particularly in being an important source of food, there are some drawbacks that have brought to food insecurity and food wastage issues in Malaysia recently. This issues requires more in-depth study from various perspectives. Thus, this study serves as a perception based analysis, concerning food insecurity and food wastage. Using both primary and secondary data, the present study explores the level of public awareness, communities’ perception towards policy relevance and effectiveness, food banking system, the role of NGOs and related economic sectors. This study has a potential in drawing greater attention among communities and policymakers towards prioritising food security and safety in the country.

Abstracts of 150-250 words are required for all manuscripts submitted.

Keywords: Food insecurity, Food safety, B40, Food wastage, Sustainability, Malaysia

1. Introduction

Food instability has certainly worried many governments' great worry for sustainability. This is because one of the food safety goals is to guarantee everyone always has access to enough food. To serve the purpose the world has seen the theory of “Food Banking system” for the first time in 1965. In the food aid sector, food banks play a key role by providing donated and bought food directly to insecure food households. The consequences of food insecurity on public health are important, especially when food insecurity is higher in some demographic groups. An estimated 60 million people or 7.2% of the population in high income countries are facing the problem of food insecurities, where in the middle and low-income countries the ratio is much higher (Pollard & Booth, 2019).
1.1 Economic wellbeing, poverty, B40 in Malaysia

Malaysia is a multi-ethnic country with an overall area of 329,847 km2 in the South-East Asia region. In recent attempts to diversify Malaysia's economy, average growth was 5.4 percent between 2010 and 2018 (Sulaiman et al. 2021).

Despite great economic growth, poverty remains an important problem in Malaysia. Malaysia’s claim that the lowest domestic poverty rate in the world is 0.4 percent, according to United Nations Human Rights Expert Philip Alston, is incorrect, as the official measure underpins poverty considerably. The national RM980 poverty level per household per month would nonetheless mean that four urban families per day per RM8 would survive. For a nation with high income status, this is painfully low, particularly when a number of rigorously independent experts predict a more practical poverty rate of 16 percent to 20 percent (The Star Online, 2019). It also revealed that almost 9% of families are under RM2, 000 a month. Domestic Trade and Consumer Affairs Ministry accepted that, 186,354 households are living below the poverty line nationwide those who are accounted and categorized as Bottom 40% or as a B40 groups. According to data from the Department of Economic Planning, the incidence of relative poverty was 18.8%, 12.3%, 15.4% and 27.9% for Bumiputera, Chinese and Indians, respectively in 2019; the incidence of absolute poverty among the same groups in 2019 amounted to 7.2%, 1.4% and 14.5%, respectively, 4.8% and 13.5% (Razak & Shahabuddin, 2018). The data reflected that there is a huge income gap in Malaysia. To fight with this vast percentage of needy people, Malaysia must enhance and speed up with their food safety and food wastage policies.

The low monthly income of households cannot live on as food prices and other necessities (inflation) keep on growing, especially among households of low income with single work parents and MYR 1100. The homes such as Kuala Lumpur, Penang, Johor Bahr and Kuching and Kota Kinabalu have noted these observations among the large cities (urban poor) (Leng et al. 2018). Poverty attention must be paid in view of its high level of instability in the buying capacity of family food. Similar scenarios occur in single-income homes, of which 89.4% are mostly classified in the B 40 category, with single working moms (bottom 40 percent of income earners). The B40 Group barely shared 16.0% of the overall incomes, according to the household income and basic amenities survey. The proportion was substantially lower than 46.8% among the T20 group and 37.2% among the M40 group (Top 20% of revenues) (middle 40 percent of income earners) (Department of Statistics Malaysia, 2020). Furthermore, poor education levels might cause insecurity in family food, with a high or low secondary education of 83.7% of single moms in Peninsular Malaysia (Abdul Talib et al. 2020). Similarly, access to school is still a challenge for small ethnic groups such as Indigenous Peoples, with large dropout rates. Lack of training prohibits better jobs from being found that can raise socioeconomic position and hence improve the quality of life. This might help explain the family food insecurity in single moms and indigenous people (Sawalludin et al. 2020). With all the above considerations, Malaysia, especially at family and individual levels, is not protected from food insecurity.

1.2 Food insecurity

Food insecurity affects millions each year in the world. “No Data, No Problem, No Action.”, the title of a paper by Friel et al. (2011), captures the crux of the matter in terms of defining the problem of food insecurity in middle income countries like Malaysia. Food insecurity is closely associated with poverty and as some countries have no official government statistics, household food insecurity estimations are made using proxy measures such as national poverty lines (Gentilini, 2019). The 2008 global food crisis is largely believed to be a portent of a bigger and deeper international struggle in years to come. According to experts, in case such a catastrophe re-visits the globe in the short term it is necessary to make significant preparations. So for many nations across the world, food security is a subject of significant concern (Alam et al., 2016). Household food security is now deemed so crucial that increased focus is placed on this subject by the industrialized countries as well. In the United States, for instance, 16.9% of the population was vulnerable to household food insecurity during the five-year period, 14.5% in 2010 to food insecurity (Wilde et al. 2010). Therefore, it's quite crucial to identify the situation that the developing world faces in this situation. We examine Malaysia’s condition in this case.
At the 1996 International Food Summit, Malaysia joined 185 other governments in signing the Rome Declaration promising, by a target date at the beginning of the 21st century, to decrease hunger prevalence by at least 50% within their jurisdictions. In Malaysia historically, in place of a particular food security strategy, food security was imbedded within the self-sufficiency concept that refers solely to the paddy or rice sector. The degree of food autonomy had not been attained by Malaysia. Approximately 10 to 35% of the needed rice is being imported from neighboring nations including Thailand, Vietnam, Burma, India and Pakistan. The country's maximum level of food self-sufficiency was 95% and the lowest level was 65% between 1975 and 1990 (Alam et al., 2011). Studies have found that 50 percent or more households among low-income rural areas are experiencing a certain level of food insecurity, with a child famine rate of 34.5 percent (Shariff & Khor, 2008).

Recently, Malaysia's urgent and long-term food security plan was highlighted by Covid-19. Photos of people who had enormous quantities of food that were broadly circulating around the Internet in the early times of the MCO caused fears among many about Malaysia's food supply. After all, before the Covid 19 outbreak, nobody would have dreamt of bread becoming such a popular item and snacked as soon as racks were regenerated. Then came the photographs of farmers dumping heaps of fresh products as food is being moved from farmland to the table with complications. While panic purchasing has declined greatly and logistical challenges are rapidly rectified for fresh goods, these pictures have raised worry that the country is competent to withstand future catastrophes and potential trade disruptive situations (Murad, 2020).

1.3 Food wastage

The waste of food is become one of the world's biggest challenges. By 2050, we are forecast to have insufficient food to feed the earth. But figures now show that we waste roughly a third of all the food we produce. Scientific research is continuing to enhance food production dramatically in order to fulfill future demands of a growing world population. While we continue to develop our technology for food production, we also have a huge worry about food waste (Ghafar, 2017).

Food waste is often happening at home while cooking and wastage during consumption of cooked, canned and ready-to-eat products but the biggest contribution to food waste takes place at large companies such as Tesco, Giant and others supermarket that provide groceries (Jaafar, Narzeri & Samsuddin, 2020). Food is wasted throughout the supply chain, from agricultural production right down to final household consumption. Amongst the more affluent consumers, to a larger extent food is wasted at the consumption stage where it is discarded even if it is still suitable for human consumption. Inadequate planning when purchasing, expiring ‘best-before-dates’ and consumer behaviour who can afford food waste are broadly listed among contributors to large amounts of waste.

Malaysia is well known for its great food. We are proud of the diversity and tastiness of our food all things that we Malaysians are quick to brag about. Unfortunately, our unique food culture is also turning into a culture of waste. It was reported that in average a household in Malaysia throw away around 0.5-0.8kg uneaten food per day (Ghafar, 2017). This problem is expected to increase in a few years while corresponding to economic development, population growth, and urbanization as Malaysia’s population is expected to reach 33.4 million by year 2020 and 37.4 million by year 2030 (Bong et al., 2017).

2. Literature Review

2.1 The fundamental concept of food

As stated in Article 25 of the Universal Declaration of Human Rights, food is a fundamental human right. In keeping with the second objective of the Sustainable Development Goals (SDGs) the elimination of hunger and the provision by 2030 of safe, nutritious and adequate food for all people, especially poor and vulnerable peoples (FAO, 2020). Food insecurity is anticipated to be removed globally. Governments have a duty not to intervene in their citizens' attempts to get food, to offer
protection when food rights are violated and to provide citizens the chance to support the achievement of food.

2.2 Food security and safety

Food security, as defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life (Sundaram & Gen, 2019). Achieving food security means ensuring that everyone in a population has access to sufficient food to meet their dietary needs. This includes having an adequate and stable supply of affordable healthy food.

At the global, national, neighbourhood, family and individual levels, food security has been acknowledged as a major challenge. The FAO estimated in 2019 that 687.8 million people, (8.9 percent) or one in ten people globally, are undernourished and that 750 million (9.7 percent) are suffering from acute food insecurity, despite having seen steady global food production (Rabbitt & Jensen, 2017). Food insecurity is tracked routinely in numerous nations, notably high-income ones, by incorporating surveys into national nutrition monitoring systems. Approximately one in ten (12.3%) US homes and 6.0% of Canada's households have been identified as affected by food insecurity (Tarasuk et al. 2014).

Food security research also focuses on vulnerable groups, especially those living in poverty and in regions or rural places that are low socioeconomic in nature. There are much greater incidences of food insecurity in vulnerable groups. 40.0% of low-income households in Puerto Rico, for instance, are classified as food insecure. In Alagoas, one of Brazil's worst states, 58.3% of families are food insecure, 33.1% of whom are classified as light, 17.9% as mild, and 7.3% as severe. In addition, 53.0 per cent of families have been recognized as seriously insecure in the rural areas of the Province of Limpopo, South Africa (Costa et al. 2017). Meanwhile, household food insecurity in urban homes has also seen a significant incidence. In rural and urban American Indian homes with children, 44.6 per cent of rural and 79.5 per cent of urban households reported food insecurity (Tomayko et al. 2017). Another research in the Ibadan metropolitan, state of Oyo, in Nigeria also revealed food insecurity in 29.3% of families (Adepoju & Oyegoke, 2018). The significant frequency of food insecurity internationally shows that these problems need to be dealt with immediately, particularly by underprivileged people. Food safety is also an important part of a physical environment. The existence of food stores and road connections are two typical considerations. Farmers and rural communities directly control the amount of food produced and affect their income owing to the shortage of arable land and the destruction caused by pests.

In Malaysia, Households with food insecurity issues are characterized by a larger family size (including more children), more school-age children, and mothers who are housewives. In comparison to food secure households, more households with food insecurity have been living below the poverty line (59.5%), with 7.8% classified as households that are hard-core poor. The percentage of households with food insecurity in Malaysia is higher in urban low-income households, such as 66.6% and 65.7% compared to rural low-income households at 58%. Nevertheless, the number of urban low-income households facing child hunger 27.8% and 27.1% is lower compared with rural households 34.5% (Chihambakwe et al. 2019). Food insecurity in Malaysia is a serious issue facing households in developing economies. Although Malaysia is generally food secure at the national level. It was ranked 40th out of 113 countries by the Global Security index in 2018, food insecurity exists at the household level.

2.3 Food insecurity and food wastage

Wasted food is a considerable component of the world’s food system challenges. Food waste can be described as all edible food materials produced for human consumption but left uneaten, either lost or discarded throughout the food supply chain, from farm to fork. It is organic waste discharged from various sources including food processing plants, and domestic/commercial kitchens, cafeterias and
restaurants (Chen et al., 2017). Alarmingly, according to Food and Agriculture Organization (FAO), approximately one-third of food produced for human consumption is lost or wasted globally. That amount is about 1.3 billion tones valued at RM4.4 trillion per year. Food is lost or wasted throughout the supply chain, from initial production down to final household consumption.

Accordingly, food waste in both rich and development nations is today seen as a critical concern and is becoming a serious topic. Garrone et al. (2014) reported that retail and consumer food waste amounts to a yearly 188 kg per person, a value of $165.6 billion, in the United States alone. In addition, they said that the anticipated annual per capita in Europe amounts to 280–300 Kilograms. Looking at South-East Asia, Yang et al. (2016) reported that average food waste in the area is expected to be 33 percent.

In addition to the existing data, Solid Waste Management and SWCorp Malaysia reported that the Malaysians produce around 15,000 tons of food waste per day in which 8,000 tons of food waste can be avoided, with a total of 3,000 tons of waste edible in waste sites and sufficient for feeding about two million people (Bashir et al. 2018). Jeremie et al. (2016) also found that in their 2002-2010 study on the solid waste composition, food waste is Malaysia's greatest contribution to 56.3 percent of total solid waste. In addition, Hamid et al. (2012) revealed that in 2005, roughly 4,404 million tons of food waste was produced, which is projected to deteriorate by 6,54 million tons by 2020. This growing number of food waste is expected from year to year for the economy and population growth in the nation (Abd Manaf et al. 2019). Malaysia is anticipated to rise from 28.6 million by 2010 to 41.5 million by 2040, according to Malaysia Department of Statistics (2016).

Nevertheless, as a food waste control policy in Malaysia an Act called "Solid Waste and Public Cleansing Management Act, 2007" has been enacted. They are recycling the waste either solid or food waste by destruction, incineration, deposit or decomposing. Landfill and put on fire are the very common methods for food waste disposal. Landfill is a very common and most of the countries are accepting this method for managing food waste as it is not so costly and easy to apply. However, handling of food waste via landfill has now become more difficult as it has reached their high capacity in Malaysia. They also adopted a new method called as "Nature friendly food waste handling methods" in which composting, anaerobic digestion or animal feeding was there and these options are possible for sustainable food waste management system, which are suitable for future implementation in Malaysia instead of landfills which put an adverse and detrimental effects to the environment (Ali et al. 2019).

2.4 Food related policies and goals

Recognition that the double burden of food waste and food deprivation needs faster global response. At 2012, a Comprehensive Maternal, Infant and Young Child Nutrition Programme, which set forth six global nutrition objectives by 2025, was adopted in the World Health Assembly Resolution 65.6. In 2012. The global food nutrition objectives have enabled world communities focus, since its approval by the 65th World Health Assembly, on the priorities for increasing food nutrition by reducing their waste. Efforts must continue until 2025 to minimize waste and hunger in all its manifestations (Siong et al. 2020).

In 2003, the Cabinet agreed to the Malaysian National Food Nutrition Policy (NNPM). Malaysia's national nutrition policy seeks the nutritional well-being of the people to be achieved and maintained. The policy is designed to provide everyone with access to appropriate, healthy, safe and good foods. It encourages and promotes healthy eating strategies. The policy would integrate and synergize the work of parties concerned in the design, implementation and evaluation of efficient and sustainable food and nutrition programs. The objective of the policy is to attain and sustain Malaysia's nutritional well-being so that it can successfully contribute to the construction of nations, in line with Vision 2020. The basis for health is good diet. In addition to excellent health it is up to others who have access to adequate, safe and good foods and know how to make educated and healthy dietary choices, beyond their value to people. Malaysia still faces difficulties connected to over-nutrition and dietary non-communicable illnesses while under-nutrition remains (NCDs). The higher frequency of NCDs connected to nutrition
helps in the country to raise morbidity, mortality and medical expenses. Different variables that spread across the spheres of responsibility of several agencies affect the nutritional well-being of the populace. The purpose of the NNPM is to consolidate efforts to tackle the twin burden of nutritional and dietary NCDs. Therefore, the Nutrition Policy offers the basis for intersectoral collaboration and synergy for optimal nutrition for everyone (Ng et al. 2021).

Now is the moment to examine the 2016-2025 NNPM with the new NPANM III direction. Since the policy is discontinued by 2020, the policy objective must also be modified. In light of new nutritional difficulties and challenges in the country, it is vital to alter the NNPM plans. The strengthening of the NNPM must include identifying efficient multi-sectoral and trans-sectoral methods (Ng et al. 2021). Reinforced activities It is vital to develop firm policies in order to provide supportive surroundings to promote healthy eating and active lifestyle. In conjunction with ICN2, a commitment to sustainable dietary food systems will also be enhanced, for example, in this context through strengthening policy coherence among stakeholders along the food supply chain: Increase investment in effective interventions and measures, even in case of emergencies, to improve diets and nutrition for people. To promote sustainable food systems and to promote safe and healthy diets throughout the year by implementing cohesive public policies from production to consumption across all sectors (Dadhich et al. 2021).

2.5 Issues, challenges and potentials

<table>
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<tr>
<th>Author &amp; year</th>
<th>Title</th>
<th>Context (global, country level, Malaysia)</th>
<th>Issues, challenges and potentials</th>
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</table>
| 1 Lim et. al., (2016) | Food waste handling in Malaysia and comparison with other Asian countries. | Malaysia and other Asian countries. | • Malaysia has been producing food waste of up to 8 000 tons every single day.  
• The reusability and recycling rate of food waste is 5% compared to paper is 60% and plastic is rather low, which is 15%.  
• 3Rs have been issued by the Solid Waste and Public Cleaning Management Act 2007, which has a good impact in the management of food wastes. |
| 2 Abd Ghafar, (2017) | Food Waste in Malaysia: Trends, Current Practices and Key Challenges | Malaysia and global context overall | • The entire production process, from initial manufacture to ultimate home consumption, is lost or wasted. The total annual value of the food waste and losses to retail and consumer use was 188 kg per capita, which is $165.6 billion. The waste was calculated at 280 to 300 kilograms per capita per year in Europe and North America.  
• The municipal stream of solid wastes in Malaysia includes around 40%–60% of recyclable garbage, including food waste, paper, plastics, glass, ferrous metal and aluminium. |
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<th>3</th>
<th>Sulaiman &amp; Ahmad, (2018)</th>
<th>Save the food for a better future: a discussion on food wastage in Malaysia.</th>
<th>Malaysia</th>
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<td></td>
<td>Back in 2005 in Malaysia, municipal solid waste (MSW) generated was 7.34 million tons and is predicted to increase to 10.9 million tons in 2020.</td>
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<td>It has become a problem for the country since it does not only waste food but also affects the country’s economy’s growth.</td>
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<td>The government is performing its duties by proposing policies, plans, and strategies for solid waste and public cleansing management, as well as formulating solid waste management plans that include the location, type, and size of new treatment facilities, solid waste management facility coverage areas, solid waste management schemes to supply controlled solid waste to solid waste management facilities, and the timeframe for implementing the plans.</td>
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<td>The relationship between knowledge, involvement, and food waste prevention behaviour was investigated using Hallahan's Issues Processes Model. The findings showed that knowledge has a positive impact on food waste prevention behaviour only when households are actively involved, and vice versa.</td>
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<td>The law on ‘Separation at Source’ under the Solid Waste and Public Cleansing Management Act in Malaysia is one of the successful policy interventions that has indirectly managed to reduce the quantity of food waste disposal from households. Segregating solid trash at the source entails separating waste based on its content, such as recyclable waste, residual waste, and bulky/garden debris.</td>
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<td>Author(s) (Year)</td>
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| 5 | Nadzri (2015)   | Development of a national strategic plan for food waste management in Malaysia. | Malaysia | • In Malaysia, food waste accounts for 50% of solid waste (at source) and 70% of all trash (as disposed at the landfill sites).  
• The main source of greenhouse gas emissions comes from the disposal of food waste at landfill sites (GHG).  
• Malaysia would adopt an indicator of a voluntary reduction in domestic waste recovery from 15 percent to 25 percent by 2020, as announced at COP-15. |
| 6 | Jereme et al. (2017) | Food waste and food security: the case of Malaysia. | Malaysia | • According to the Malaysian Ministry of Housing and Local Government (MHLG), the quantity of food waste generated by homes is up to 8,745 tonnes per day, or 3,192,404 tonnes per year.  
• Despite this waste, the incidence of total food insecurity in Malaysian low-income families was 65.7 percent to 66.6 percent in urban low-income families, compared to 58 percent in rural low-income populations.  
• A periodic action of the household food security survey module (HFSSM) can be imitated in Malaysia to identify families in need of assistance as the government strives to provide sufficient food access (food security) to all citizens and minimise basic poverty among households as Malaysia moves closer to becoming a developed country. |
| 7 | Dasgupta & Robinson (2021) | Food insecurity, safety nets, and coping strategies during the COVID-19 pandemic: multi-country evidence from sub-Saharan Africa | Chad, Djibouti, Ethiopia, Kenya, Malawi, Mali, Nigeria, South Africa, and Uganda. | • Food insecurity appears to be worsening for female-headed families, the underprivileged, and the less officially educated during this worldwide epidemic, according to econometric analysis.  
• The data suggest that the pandemic’s negative effects are considerably worse for low-income families and those who had to borrow to earn a living rather than save.  
• The findings offer a benchmark for governments to use in developing and implementing targeted strategies. |
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<th></th>
<th>8</th>
<th>Law et al. (2018)</th>
<th>The identification of the factors related to household food insecurity among indigenous people (Orang Asli) in peninsular Malaysia under traditional food systems.</th>
<th>The selected study locations were at Gua Musang District (Kelantan State), Rompin District (Pahang State), and Gerik District (Perak State), Malaysia.</th>
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<td>• A large percentage of Orang Asli (OA) households in Malaysia have been found to be food insecure over the span of 16 years.</td>
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<td>• The study found four main themes: I agricultural failure (sub-themes: wild animal threats and limited land supply), (ii) inefficacy of conventional food-seeking practices, (iii) weather (subthemes: rainy and dry seasons), and (iv) water concerns (subthemes: continuity of water supply and cleanliness of water).</td>
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<td>9</td>
<td>Naser et al. (2015)</td>
<td>Association between household food insecurity and nutritional outcomes among children in North-eastern of Peninsular Malaysia.</td>
<td>Malaysia</td>
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<td>• Because of financial limitations, 13.4% of individuals in Malaysia decreased the amount of their meals and missed main meals. East Malaysia had 20.3 percent, whereas Peninsular Malaysia had 11.5 percent.</td>
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<td>• Availability, Accessibility, Utilization, and Stability were indicated as four coping techniques and policies to lower the level of insecurity in the study.</td>
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<td>10</td>
<td>Teng &amp; Trethewie, (2012)</td>
<td>Tackling urban and rural food wastage in Southeast Asia: issues and interventions.</td>
<td>Southeast Asia region</td>
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<td>• In compared to paper, the percentage of food waste reuse and recycling has been found to be quite low (5%) than (60 per cent). This is owing to the lack of a specific food waste disposal strategy other than recycling and reusing paper and plastic. Food waste proper segregation is limited, and food waste composting is not conducted on a bigger level, hence this approach is not widely adopted.</td>
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<td>• Apparently, over 90% of food waste in Southeast Asia is compostable and recyclable. To raise greater awareness, however, education through initiatives like the 3Rs (Reduce, Reuse, and Recycle) and reward policies must be implemented.</td>
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<td>• Dealing on the problem of food waste and loss can result in a &quot;triple victory.&quot; Farmers, businesses, and individuals can all benefit from savings. We can feed more people if we waste less food. Cutbacks can</td>
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also help the environment, as well as the climate, water, and land.

- The "Target-Measure-Act" three-step strategy is a valuable framework that corporations and governments use to manage food loss and waste reduction programmes.

<table>
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<tr>
<th>12</th>
<th>Pateman et al. (2020)</th>
<th>Citizen science for quantifying and reducing food loss and food waste.</th>
<th>A Global Context</th>
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<tr>
<td></td>
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<td></td>
<td>Food waste and loss are critical global issues linked to environmental and socioeconomic issues such as deforestation, global warming, health, and starvation.</td>
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<td>SDG 12.3, which aspires to halve per capita food waste at retail and consumer levels internationally by 2030, along with minimize food losses throughout production and supply chains, has been set as one of the reduction targets.</td>
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<td>The findings revealed the importance of bringing all participants in the food system together in citizen science projects in order to foster shared understanding and, as a result, reduce food loss and waste.</td>
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3. **Data and Methods**

This study is done based on dual approach, content analysis through a systemic analysis of scientific literature and descriptive analysis based on a brief survey. Thus, this study consists of two major parts. In the first part, the scope of systematic review covers information related to food security and food wastage issues globally and in Malaysian context. Five key issues were identified as essential for preliminary study, namely, public awareness level, policy relevance, food banking capability, the role of economic sectors and Non-Governmental Organisations (NGOs). The second part of the study involves a perception-based analysis on major concern and issues with regards to food insecurity and food wastage in Malaysia. Primary data using a brief survey questionnaire containing basic attributes reflecting the five key issues were collected and analysed based on descriptive statistics in order to capture the fundamental perception of people on issues related to food insecurity and food wastage in Malaysia.

4. **Findings and Analysis**

A brief survey questionnaire was administered to explore the perception of Malaysian community on issues related to food insecurity and food wastage in Malaysia. The data collected were analysed using the descriptive approach. The descriptive findings include individual profiling and perceived level of five key issues pertaining to food insecurity and food wastage in Malaysia.
As shown in Table 1, about 44.1 percent of respondents are from the age group of 18-25 years’ old, followed by 22.5 percent from the age group of 26-35 years’ old. Approximately 27 to 28 percent of the respondents are from the age group of 36-55 years’ old. The percentage of respondents aged 55 years’ old and above accounted for 5.9 percent only.

In the context of educational level, the highest group of respondents is those with Bachelor’s Degree, nearly 62 percent. Respondents with Master’s degree and Doctorate degree are 15.7 percent and 6.9 percent respectively. As for the remaining respondents, about 11 percent possess Diploma and nearly 5 percent are high school leavers. It was found that the respondents with the above qualifications represented five different categories of employment status comprising the employed for wages (47.1 percent), self-employed (8.8), homemaker (2 percent), student (38.2 percent) and retired (3.9 percent).

In terms of income group, 45.1 percent of the respondents is from B40 and 48 percent from M40. The remaining respondents are from T20. As shown in Table 1, the highest participation groups are from the state of Johor (19.6 percent), Melaka (19.6 percent), Selangor (16.7 percent), Pulau Pinang (11.8 percent) and Perak (8.8 percent). As for all other states, respondents’ participation is below 5 percent.

In order to analyse the perceived level of five key issues pertaining to food insecurity and food wastage in Malaysia, descriptive statistics for 5 elements (public awareness, policy relevance, food banking, role of economic sectors and the NGOs) were calculated. The descriptive aggregate data in terms of mean and percentage are shown in Table 2 and Figure 1 respectively.

As indicated in Table 2, the respondents perceived hunger as a problem in Malaysia (m=3.16) but not as critical as how they view the phenomenon of food wastage (m=4.23). The finding (Figure 1) shows that most of the respondents are at the state of neutral (37 percent) and agreed to strongly agreed (36 percent) when it comes to hunger, and neutral (32 percent) and agreed to strongly agreed (46 percent) when it comes to food insecurity. At glance of respondents’ awareness, they are at the level of agreeing (35 percent) to strongly agreeing (47 percent) about the seriousness of food wastage (m=4.23) and fairly agreeing, close to 58 percent, about the occurrence of food insecurity among B40.

In the context of policy adequacy, policy effectiveness, the experts’ availability, and best practices pertaining to food insecurity and food wastage in Malaysia, respondents perceived level are more to being neutral to disagree which accounted for 69 percent, 67 percent, 75 percent and 65 percent respectively. However, they view the policy and practices slightly relevant and practical compared to the efficiency of the policies (m=2.81) and the adequacy of researcher and experts (m=2.86) to help the government in tackling food insecurity and food wastage issues.

About 50 percent of respondents perceived food banking system as an ultimate solution for food insecurity and food wastage issues (m=3.35). The mean score obtained for the adequacy of food banks in Malaysia is m=3.01. When it comes to efficiency of food banking, the mean score is relatively low. The impression of 70 percent to 72 percent respondents towards the adequacy and efficiency of food banking falls under the range of being neutral to strongly disagreed.

Respondents seems to have a clear view towards the role of economic sectors in tackling food insecurity and food wastage issues in Malaysia. They perceived all economic sectors (m=3.36), particularly agricultural (m=3.81) to be proactive in facing challenges of food insecurity and food wastage. This includes the industrialisation (m=3.4) process in Malaysia. Based on Figure 1, approximately 50 percent of the respondents views all economic sectors to have an important role, whereas close to 65 percent of the respondents perceived agricultural as most crucial in overcoming food insecurity and food wastage issues. Only about 11 percent falls under disagreed state while viewing whether industrialisation in Malaysia would be able to tackle the food insecurity and food wastage issues.

As indicated in Table 2, the respondents’ perception on the role of non-governmental organisations (NGOs) in tackling the food insecurity and food wastage issues in Malaysia is considered as moderately high based on the overall mean scores (m=3.59) compared to the overall mean scores for other key issues, public awareness (m=3.58), policy relevance (2.94), food banking system (m=3.08) and the role
of economic sectors (m=3.53). Majority of the respondents agreed (73 percent) that we need non-governmental organisations (NGOs) in tackling the food insecurity and food wastage issues in Malaysia. In terms of whether Malaysia has the adequate number of NGOs, although 42 percent of the respondents are at the neutral state, on the other hand, about 41 percent rated between agreed and strongly agreed. About 52 percent of the respondents perceived NGOs as currently playing a vital role in tackling the food insecurity and food wastage issues in Malaysia.

5. Conclusion

As a conclusion for the descriptive findings and analysis, the perceived level of five key issues pertaining to food insecurity and food wastage in Malaysia may provide a fundamental knowledge on how people view and aware of those issues in the current socio-economic context. Considering the overall mean scores obtained for the five key issues, public awareness (m=3.58), policy relevance (2.94), food banking system (m=3.08) and the role of economic sectors (m=3.53) and the role of NGOs (m=3.59), the highest overall mean score comes from perception of respondents being aware of hunger, food insecurity and food wastage as well as for the role of NGOs. Issues relevant to policies and practices scored the lowest in terms of the overall mean scores which is 2.94. In line with this, based on the percentage scores, there are 5 items where the highest number of respondents perceived between agreed to strongly agreed, such as, food wastage is a critical phenomenon in Malaysia (82 percent), food insecurity is common among B40 group in Malaysia (58 percent), agricultural sector is the most important sector that would be able to tackle the food insecurity and food wastage issues (65 percent), we need NGOs in tackling the food insecurity and food wastage issues in Malaysia (73 percent), NGOs are currently playing a vital role in tackling the food insecurity and food wastage issues in Malaysia (51 percent).

Public awareness on issues relating to hunger, food security, food safety and food wastage are crucial globally at this point of time. Despite of numerous literature coverage on sustainable development in general and hunger as well as food security in specific, more literatures are keep emerging as people globally facing various challenges and obstacles due to the current pandemic. As long as there are differences in terms of demographical characteristics, population, income distribution, poverty and geopolitical factors among societies worldwide, the food security and food wastage would be studied at various level using various methodological approach. Thus, the current study which integrates five key issues concerning food insecurity and food wastage in Malaysia would certainly contributes towards the theoretical aspect of studies in this area particularly and sustainable development generally. In terms of contextual perspective, at this point of time, sustainable societies and sustainable development are essential for the world and people to recover and prosper. Thus, this study has a potential in rendering ideas for policymakers to prioritise viable policies and practices which would be able to gain wider participation and engagement by public.

This study is based on content analysis and brief survey with descriptive analysis which made possible to achieve the motif of this study which is to discover the respondents’ perception on food insecurity and food wastage issues in Malaysia. More in depth studies using empirical research methods are essential. Sample size is also being another limitation for the current study. Future research may engage with larger sample size and more measurable attributes that may help to determine the success factors.
References


Wilde, P. E., Nord, M., & Zager, R. E. (2010). In longitudinal data from the survey of program dynamics, 16.9% of the US population was exposed to household food insecurity in a 5-year period. *Journal of hunger & environmental nutrition, 5*(3), 380-398.

Table 1: The Profiles of Respondents

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Demographic details</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group</td>
<td>18-25 years’ old</td>
<td>44.1</td>
</tr>
<tr>
<td></td>
<td>26-35 years’ old</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td>36-45 years’ old</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>46-55 years’ old</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>Above 55 years’ old</td>
<td>5.9</td>
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<tr>
<td>Educational level</td>
<td>Up to high school/SPM</td>
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<tr>
<td></td>
<td>Diploma</td>
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<td>Bachelor Degree</td>
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<tr>
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<td>Master Degree</td>
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</tr>
<tr>
<td></td>
<td>Doctorate Degree</td>
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<td>Employment Status</td>
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<td></td>
<td>Self-employed</td>
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</tr>
<tr>
<td></td>
<td>Homemaker</td>
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</tr>
<tr>
<td></td>
<td>Student</td>
<td>38.2</td>
</tr>
<tr>
<td></td>
<td>Retired</td>
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</tr>
<tr>
<td>Income group</td>
<td>B40</td>
<td>45.1</td>
</tr>
<tr>
<td></td>
<td>M40</td>
<td>48.0</td>
</tr>
<tr>
<td></td>
<td>T20</td>
<td>6.9</td>
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<td>Kedah</td>
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</tr>
<tr>
<td></td>
<td>Kelantan</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>Melaka</td>
<td>19.6</td>
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<tr>
<td></td>
<td>Negeri Sembilan</td>
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</tr>
<tr>
<td></td>
<td>Pahang</td>
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<tr>
<td></td>
<td>Perak</td>
<td>8.8</td>
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<td>Perlis</td>
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<tr>
<td></td>
<td>Pulau Pinang</td>
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<td>Selangor</td>
<td>16.7</td>
</tr>
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<td>Terengganu</td>
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</tr>
<tr>
<td></td>
<td>Sabah</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Sarawak</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Wilayah Persekutuan Kuala Lumpur, Labuan, Putrajaya</td>
<td>4.9</td>
</tr>
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</table>
Table 2: Mean Score for Food Insecurity and Food Wastage Issues in Malaysia

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Mean value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hunger is a serious problem in Malaysia</td>
<td>3.16</td>
</tr>
<tr>
<td>2</td>
<td>Food insecurity is a critical phenomenon in Malaysia</td>
<td>3.31</td>
</tr>
<tr>
<td>3</td>
<td>Food wastage is a critical phenomenon in Malaysia</td>
<td>4.23</td>
</tr>
<tr>
<td>4</td>
<td>Food insecurity is common among B40 group in Malaysia</td>
<td>3.63</td>
</tr>
<tr>
<td></td>
<td><strong>Overall Mean Score</strong></td>
<td><strong>3.58</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Public awareness</strong></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Malaysia has adequate policies to tackle food insecurity and food wastage issues</td>
<td>3.06</td>
</tr>
<tr>
<td>6</td>
<td>Malaysia has effective policies to tackle food insecurity and food wastage issues</td>
<td>2.81</td>
</tr>
<tr>
<td>7</td>
<td>Malaysia has adequate researcher and experts to help the government in tackling food insecurity and food wastage issues</td>
<td>2.86</td>
</tr>
<tr>
<td>8</td>
<td>The food security and safety practices in Malaysia are in line with the global sustainable development goals</td>
<td>3.02</td>
</tr>
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<td></td>
<td><strong>Overall Mean Score</strong></td>
<td><strong>2.94</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Policy relevance</strong></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Food banking system is being an ultimate solution for food insecurity and food wastage issues in Malaysia</td>
<td>3.35</td>
</tr>
<tr>
<td>10</td>
<td>Malaysia has adequate number of food banks</td>
<td>3.01</td>
</tr>
<tr>
<td>11</td>
<td>Food banking system in Malaysia is efficient</td>
<td>2.86</td>
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<tr>
<td></td>
<td><strong>Overall Mean Score</strong></td>
<td><strong>3.08</strong></td>
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<td></td>
<td><strong>Food banking system</strong></td>
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<tr>
<td>12</td>
<td>In Malaysia, all economic sectors play an important role in tackling food insecurity and food wastage issues</td>
<td>3.36</td>
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<tr>
<td>13</td>
<td>Agricultural sector is the most important sector that would be able to tackle the food insecurity and food wastage issues</td>
<td>3.81</td>
</tr>
<tr>
<td>14</td>
<td>Industrialisation in Malaysia would be able to tackle the food insecurity and food wastage issues</td>
<td>3.4</td>
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<td></td>
<td><strong>Overall Mean Score</strong></td>
<td><strong>3.53</strong></td>
</tr>
<tr>
<td></td>
<td><strong>The role of economic sectors</strong></td>
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</tr>
<tr>
<td>15</td>
<td>We need Non-Governmental Organisations (NGOs) in tackling the food insecurity and food wastage issues in Malaysia</td>
<td>4.0</td>
</tr>
<tr>
<td>16</td>
<td>Malaysia has adequate number of Non-Governmental Organisations (NGOs) working on food insecurity and food wastage issues</td>
<td>3.31</td>
</tr>
<tr>
<td>17</td>
<td>Non-Governmental Organisations (NGOs) are currently playing a vital role in tackling the food insecurity and food wastage issues in Malaysia</td>
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<td><strong>3.59</strong></td>
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<td></td>
<td><strong>The role of NGOs</strong></td>
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</tbody>
</table>
Figure 1: Perception of Malaysian community on issues related to food insecurity and food wastage in Malaysia
Food banking system in Malaysia is efficient

In Malaysia, all economic sectors play an important role in tackling food insecurity and food waste issues

Agricultural sector is the most important sector that would be able to tackle the food insecurity and food waste issues

Industrialisation in Malaysia would be able to tackle the food insecurity and food waste issues

We need Non-Governmental Organizations (NGOs) in tackling the food insecurity and food waste issues in Malaysia

Malaysia has adequate number of Non-Governmental Organisations (NGOs) working on food insecurity and food waste issues

Non-Governmental Organizations (NGOs) are currently playing a vital role in tackling the food insecurity and food waste issues in Malaysia