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The Malaysian Journal of Business and Economics (MJBE) is intended as a primary publication for theoretical and empirical research or modelling in all areas of business and economics. The aim of the journal is to select contributions that will have high relevance and impact in a wide range of topics in business and economics. We welcome submissions from a range of theoretical and methodological frameworks. All work submitted to the journal should be original in motivation or empirical/theoretical modelling. Every submission to MJBE will be subject to a careful peer-review process.

Editor-in-Chief

ANALYSIS OF ELASTICITIES OF HOUSEHOLD FUEL TYPES IN THE NORTHEASTERN REGION OF NIGERIA

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ABSTRACT

Demand for fuel types relies on how low their prices are and the household income. This study used secondary data obtained from the Nigerian Bureau of Statistics General Household Survey (2021) to analyze household fuel demand sources in the North-East Zone of Nigeria. The study used the AIDS model. The results showed that all energy sources except kerosene were comfort goods (elasticities = 1). Kerosene was found to be a necessity (elasticity < 1). This means that households will demand more kerosene if its price falls, but they will demand significantly less kerosene if its price rises. All energy sources were also price elastic (elasticities = 1). This means that households will demand less energy if its price rises, and vice versa. Finally, the results showed that all energy sources had a complementary relationship (negative elasticities). This means that if the price of one fuel type rises households will demand more of other fuel sources. The study recommends that there should be Investment in grid expansion, LPG subsidies, and awareness campaigns for clean energy adoption by the relevant stakeholders which includes government, private, non-governmental organizations, development partners and civic society organizations.

INTRODUCTION

The term energy refers to the use of chemical resources to provide power or light for cooking, space heating, cooling, ironing, and other purposes. Household fuel demand is the total amount of energy purchased and used by households for these purposes. Energy demand is essential for household welfare, public investments, and environmental considerations. Efficient exploitation and development of a nation's energy resources are crucial for its progress and the well-being of its people. The household sector accounts for about 36% of global energy use, with 80% of that used for primary energy use in developed countries. Developing countries use a higher share of household energy, but the average per capita household energy use in developed countries is about nine times higher than in developing countries.

In Nigeria, despite having huge reserves of both renewable and non-renewable energy resources, inadequate development and inefficient management of the energy sector have led to a supply-demand gap and consequently high solid fuel demand among households. In Nigeria, about 86% of rural households depend on fuelwood as their primary energy source. This is due to a lack of electricity supply and limited access to conventional energy such as petroleum products due to poor road networks. Petroleum products such as kerosene and gasoline are also sold at very high prices in rural areas.

Low-income households in urban areas also rely on biomass fuels, such as wood and dung, due to fuelwood supply/demand imbalance in some parts of the country. In the northern part of Nigeria, charcoal is widely used for cooking, space heating, ironing clothes, and heating pieces of local scent sticks used as room air fresheners. Due to the unreliable electricity supply in Nigeria, many households have switched to alternative energy sources such as power-generating plants. However,

there is little empirical research on household expenditure on these alternative energy sources, especially fossil fuels.

This study seeks to empirically analyze household fuel demand in the North-East region of Nigeria. It specifically, seeks to determine the expenditure, own-price, and cross-price elasticity of demand for electricity, charcoal, fuelwood, and kerosene. The study is necessary because previous studies on household energy demand in Nigeria have had several shortcomings. For example, some studies have focused on specific fuels or regions, while others have not considered all the relevant factors that influence household energy demand. The study utilizes secondary data from the Nigerian Bureau of Statistics General Household Survey (2020). The study employed the Almost Ideal Demand System (AIDS) model. The findings are expected to provide valuable insights into household energy demand in the North-East region of Nigeria. This information can be used to develop policies and programs that improve energy access and affordability for households in the region.

METHODOLOGY

Study Area

The study was conducted in the North-East Zone of Nigeria, which is located between 6°25' and 13°43' north latitude and 8°35' and 14°39' east longitude. It has a total land area of 923,773 square kilo meters and is made up of six states: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe. The combined population of the zone was 18,832,995 in 2006 and was projected to reach approximately 301,163,503.32 by 2021.

Data Type and Variables

This study relied on secondary data sourced from the National Bureau of Statistics (NBS) General Household Survey, Panel 2020-2021.

Specifically, data was extracted from 907 households located in the north eastern region. The survey encompassed a range of crucial information, including details on household socio-economic attributes, data regarding agricultural and non-agricultural enterprises, income-generating activities, expenses related to food consumption, and various non-food expenditures (NBS, 2021). This research focused on five distinct independent variables, as outlined in Table 1, which delineates the measurement criteria for each variable.

Table 1 shows the measurement of variables.

Variables	Measurement
Fuel source demand	Is measured by the quantity of fuel used by a particular household measured in kg.
Household monthly income	Household Monthly income is proxied by total household monthly expenditure.
Household size	The variable is measured as the total number of individuals dwelling in the same house and sharing meals.
Age	This variable is measured in years as the total number of years since the person was born.
Sex	The sex of the respondent is a binary variable representing a value of 1 for males and 0 for females.
Area of residence	This is also a dummy variable representing 1 for urban and 2 for rural.

Source: The Author.

Model Specification and Method of Estimation

a. Almost Ideal Demand System Model (AIDS)

The AIDS model was employed following Ogunniyi, Adepaju and Olapade-Ogunwole (2012) to estimate the budget share of the various energy sources used by households. The AIDS model is a flexible and well-behaved model for estimating demand functions. It has several advantages over other models, such as the linear expenditure system (LES) and the quadratic demand system (QDS). For example, the AIDS model can account for substitution

and complementary relationships between goods, and it does not impose any restrictions on the income and price elasticities of demand. The equation is expressed as:

$$W_i = \alpha_i + \sum x_{ij} \log P_j + \beta_i \log (X/P) \quad (\text{Equation 1})$$

where,

W_i = The i^{th} budget share

X = Total expenditure

α_i = intercept and represents average budget share when all logarithm prices and real expenditures are equal to one (1)

x_{ij} = $(\delta w_i / \delta \log p_j)$ it equals to price coefficient, change in i^{th} budget share with respect to change in j^{th} price with expenditure held constant.

β_i = $\delta w_i / \delta \log X/P$ is equal to expenditure coefficients, change in the i^{th} budget share corresponding to a percentage change in real expenditure with all prices held constant. If $\beta_i = +$ is a luxury, if $\beta_i = -$ is necessities

P_j = Price of j^{th} item

P = Consumer Price Index

The coefficients estimated from the AIDS model were used to calculate the expenditure, own-price, and cross-price elasticities of demand for the various household energy sources. The expenditure elasticity of demand measures how much the quantity of energy source i demanded changes when total household expenditure changes. The following equation was used to calculate the expenditure elasticity:

$$E_i = 1 + \beta_i / W_i \quad (\text{Equation 2})$$

Where,

E_i = expenditure elasticity of fuel type item i

β_i = Expenditure coefficient of fuel type item i

W_i = Budget share of fuel type item i

To obtain the own-price elasticity which measures how much the quantity of energy source i demanded changes when its own price changes, the estimated expenditure elasticity and the coefficients estimated in equation (2) above were substituted into the Marshallian Price elasticity equation. The equation is specified as follows: -

$$e_{ij}^m = \frac{\beta_i w_j}{\beta_i w_j + w_i - \delta_{ij} w_i} \quad (\text{Equation 3})$$

where,

β_i = expenditure coefficient of fuel type item i

w_i = budget share of fuel type item i

w_j = budget share of fuel type item j

$\delta_{ij} = 1$, when $i = j$, otherwise $\delta_{ij} = 0$

The cross-price elasticity of demand measures how much the quantity of energy source i demanded changes when the price of another energy source, j , changes. Thus, the Hicksian price elasticity will also be computed using Slutsky's equation given as,

$$e_{ij}^h = e_{ij}^m + w_j e_i \quad (\text{Equation 4})$$

where,

e_{ij}^h = Hicksian price elasticity

e_{ij}^m = Marshallian price elasticity

w_j = budget share of fuel types item j

e_i = expenditure elasticity of fuel types i

w_j = budget share of fuel types item j

A priori expectation.

The price elasticity of demand for fuel sources is expected to vary depending on the type of fuel type. The demand for electricity is expected

to be price elastic while the demand for other fuel sources, such as charcoal, fuelwood, and kerosene, is expected to be price inelastic. This is because these energy sources are often essential for cooking and other basic needs.

The demand for fuel types is also expected to be income elastic. However, the demand for electricity is expected to be more income elastic than the demand for other energy sources. This is because electricity is used for a wider range of purposes, such as lighting, air conditioning, and refrigeration. While the cross-price elasticities between electricity and other energy sources are expected to be positive.

FINDINGS

Expenditure, Price and Cross-Price Elasticities of Energy Demand

The estimated parameters of the AIDS model for the fuel types considered for the households in the North-east region which includes expenditure elasticities, price elasticities, and cross-price elasticities, are detailed in Table 2. The model was computed using the SAS statistical software package.

Table 2 shows the Non-Linear AIDS Regression Parameters Estimates of Meat Demand System

Variable	Budget Share	Expenditure Elasticity	Own price
Charcoal	-0.031	1.003	-1.100
Electricity	0.289	0.999	-0.999
Fuelwood	0.360	0.998	-1.001
Kerosene/charcoal	0.070	0.886	-1.052
LPG	0.304	0.998	-0.999
Cross-price	Charcoal	Electricity	Fuelwood
Charcoal	1.000		
Electricity	-0.810	1.000	
Fuelwood	-0.739	-0.639	1.000
Kerosene	-7.028	-0.741	-0.678
LPG	-0.795	-0.728	-0.638
		Kerosene	LPG
		1.000	
		-0.728	1.000

Source: Generated by Stata 13 from the author's data

Expenditure Elasticity of Demand

Expenditure elasticities for all the fuel types considered were positive, ranging from 0.886 to 1.003. This signifies that all the energy sources examined in this study are categorized as normal goods, aligning with previous research findings (Authur *et al*, 2012). Furthermore, it implies that as income increases, the demand for these energy sources also rises. Notably, all the expenditure elasticities approximated to one (1), except for kerosene. This suggests that all energy sources are comfort goods. However, kerosene exhibited a lower elasticity, less than unity (0.886), indicating its status as a necessity for the residents of the North-east region of Nigeria, consistent with prior research (Kebede *et al*, 2012). Additionally, the expenditure elasticity of electricity being equal to one aligns with the a priori expectation of it being income elastic, whereas the elasticities equal to one (1) for the other energy sources contradict this expectation, as they were anticipated to be income inelastic.

These findings suggest that for energy sources with elasticity equal to one (1), consumers allocate the same proportion of their income to all these sources as their incomes increase. This phenomenon is likely because such sources, being comfort goods, are essential and are consumed habitually. Consequently, changes in income result in a proportional change in expenditure.

Another explanation for this outcome is the multifaceted utility of these energy sources. For instance, electricity serves various purposes, such as lighting homes, cooking, space heating, and ironing clothes. LPG is recently used for cooking and lately, as a smart energy solution, it is used in power-generators as a substitute for petrol, while firewood is used for cooking, heating, and charcoal production. Consequently, an increase in tariffs or prices may lead to a prioritization of essential uses.

However, the expenditure elasticity for charcoal is somewhat higher, possibly due to its widespread use in the study area for room air freshening through local scent sticks. It is also utilized for cooking, space heating during the harmattan season, and ironing clothes, primarily due to inconsistent electricity supply.

Conversely, the expenditure elasticity of kerosene, being less than one, underscores its status as a necessity. While it is a normal good and its demand rises with increased income, the rise is proportionally lower. Consequently, the share of expenditure allocated to kerosene diminishes as income increases. This can be justified by kerosene's advantages, such as emitting fewer fumes compared to firewood, long-term storage safety, and its utility as a lighting source in oil lamps. Moreover, it serves as a backup fuel for households using LPG in case their gas supply unexpectedly depletes and as a lighting fuel for wood-based lamps.

Own-Price Elasticity of Energy Demand

The findings presented in Table 3.1 reveal that all uncompensated price elasticities were negative, spanning from -0.999 to -1.100. Moreover, all coefficients indicated that all the fuel types exhibited price elasticity, aligning with the findings of (Maina, 2018). This also corresponds with the a priori expectation for "dirty" fuel types but contrasts with expectations for "clean" fuel types. Initially, it was anticipated that the price elasticities of demand for dirty fuels would be elastic, while those for clean energy would be inelastic.

From the results, it becomes evident that charcoal is the most responsive to its own price. This can be explained based on its expenditure elasticity, which was the highest (1.003). This aligns with the theoretical notion that the higher the percentage of a consumer's income allocated to a product, the greater the price elasticity tends to be, or the more responsive it is to its own price. This suggests that people pay close attention to items that

consume a larger share of their income, and consequently, higher prices lead to reduced demand. However, the surprising result is that of kerosene, which, despite being categorized as a necessity, is the second most responsive to its own price. This may be due to the degree of its necessity, as reflected in its expenditure elasticity coefficient, which was close to that of a comfort good (0.886). Hence, its status as a necessity is not exceptionally high. Regarding the remaining fuel types, electricity, LPG, and fuel wood exhibit an equal degree of responsiveness to changes in demand due to price fluctuations, with all having an absolute elasticity of one. In general, all the fuel types considered display price elasticity, implying that a 1% increase in their prices would result in a decrease in demand: charcoal by 110%, kerosene by 105%, and electricity, LPG, and firewood by 99% each, respectively.

Cross-Price Elasticity of Energy Demand

The findings reveal that all compensated price elasticities were negative, ranging from -0.639 to -0.810. This indicates the presence of complementarity among all the fuel types, aligning with the findings of Maina *et al.* (2017). This contradicts the *a priori* expectation, which assumed positive cross-price elasticities between electricity and other fuel types as substitute commodities. Additionally, all the cross-price coefficients were lower than the own-price elasticities in absolute terms and were more inelastic. This implies that changes in the price of a commodity relative to its own price are elastic. The complementarity suggests a strong correlation in the quantities demanded for these fuel types, stemming from their similar functions. Electricity, LPG, and kerosene can all be used for lighting, cooling, or heating homes, while electricity, kerosene, charcoal, and firewood serve purposes in cooking. Electricity and charcoal can also be used for ironing, among other functions. These fuel types act as fallback options for one another rather than substitutes. Some households use fuel wood for cooking items that require longer cooking times, such as

cow tail or cow leg, while other items that are quicker to cook are prepared using different fuel types. Moreover, due to intermittent power supply in Nigeria, many households have resorted to using power generators, further illustrating their complementarity.

The negative coefficients can be explained by the high correlation among these fuel types. An increase in crude oil prices, for example, would lead to higher electricity bills due to increased costs for electricity-generating companies. Additionally, rising crude oil prices would elevate the prices of kerosene and LPG, as they are derived from the same source. Fuel wood and charcoal would be affected by increased transportation costs associated with a rise in crude oil prices. Consequently, an increase in crude oil prices would elevate the prices of all energy items and reduce their demand, with the greatest impact on end consumers. Additionally, restrictions or bans on fuel wood exploitation would affect its price and that of charcoal.

Slutsky's Symmetry was both imposed and tested in this analysis. This symmetrical constraint was predicated on the assumption that $(\gamma_{ij} = \gamma_{ji})$, indicating that the compensated cross-price effects between any two goods are equal. Consequently, the vacant columns in Table 2, marked with (1.000), denote the own-price effects or the manifestation of Slutsky's symmetry. This restriction is applicable within and across the equation-constrained parameters (α, β, γ) , and it was enforced using the restricted language.

CONCLUSION

This study has revealed that all the energy sources under consideration are categorized as normal and comfort goods, except for kerosene, which is identified as a necessity. However, it is important to note that its degree of necessity is relatively low, as its coefficient almost sums up to that of a comfort good. Additionally, kerosene is not an inferior good, contrary to the characterization presented by the energy ladder model.

In terms of own-price elasticity for all the energy sources, they were found to exhibit elasticity, with charcoal demonstrating the highest responsiveness to changes in its own price. On the other hand, the analysis of cross-price elasticities indicates that there is a complementary relationship among all the energy sources.

RECOMMENDATION

Based on these findings the following recommendations are proffered;

- a. The government and private sectors should invest in Infrastructural development to expand the electricity grid to reach remote areas. Ensuring a reliable and stable electricity supply would encourage households to switch to electric cooking. Also, government should subsidize or tax incentives to make electricity to make it more affordable for households, especially in low-income communities.
- b. The government should also subsidize LPG by helping to offset the initial cost of purchasing LPG stoves to be more affordable for households, especially in low-income communities.
- c. The government, private sector, non-governmental organization, development partners and civil societies should support by launching public awareness campaigns highlighting the benefits of using clean energy for cooking, such as reduced indoor air pollution, improved health outcomes, and environmental conservation. These campaigns can target both urban and rural areas.

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EVALUATING THE BUSINESS MODEL INNOVATION OF SMALL SNACK FOOD PRODUCTION ENTERPRISES IN CHINA BASED ON THE VARIM MODEL

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ABSTRACT

This paper examines the business model innovation situation, evaluation and key factors of small snack food production enterprises in China, and provides suggestions for enterprises. A questionnaire designed using the VARIM model evaluates business model innovation based on five aspects, combined with the influential role of relational resources, digital technology, and long tail theory. It is hypothesized that relational resources, digital technology, and long tail theory have a positive impact on business model innovation, and that the VARIM model assesses profitability potential. It is hypothesized that firms should utilize these factors for business model innovation to improve competitiveness and sustainability. The findings and conclusions of this paper are based on assumptions and speculations, which need to be verified and corrected by subsequent practical investigations.

INTRODUCTION

Business model innovation is a multifaceted innovation involving products, processes, organizations and marketing, focusing on how a company positions itself, interacts with customers and partners, and achieves sustainable competitive advantage. The market size of China's casual food industry is driven by consumer demand. Consumption upgrading and changes in consumer concepts

have driven the industry's development, but there are problems such as low concentration and serious product homogenization. Casual food manufacturers are suitable for incremental innovation and adoption of innovative approaches, and digital technology plays a significant role in the field of corporate innovation. Enterprises need to reassess their own resources and external resources for business model innovation. Personalized demand is the trend in the casual food industry, and small casual food producers can apply the long-tail theory to quickly capture the market for customized services. The results of business model innovation for enterprise development are full of variables, and the VARIM model can be used to evaluate the profit potential of business model innovation. This paper constructs a research framework to evaluate the business model innovation of small-scale casual food manufacturers in China.

LITERATURE REVIEW

The concept of business model innovation

Business model innovation is based on the theory of dynamic capabilities and value creation by sensing opportunities, seizing them, mobilizing resources and continuously updating core competencies (Cosenz & Noto, 2018) in order to build dynamic capabilities and an open innovation process that creates value (Chesbrough, 2003). Franco et al. (2021) constructed a dynamic capacity assessment tool through a literature review. They emphasized the role of business models in shaping dynamic capabilities and introduced the concept of "business model innovation engines". Value creation theory emphasizes that the primary task of managers is to understand value from the customer's perspective (Ulaga et al, 2001). Firms do not only create value through the exchange of goods and services in the marketplace; rather, business relationships themselves represent a great potential for value creation (Eggert et

al., 2018). Business model innovation consists of innovation in five core components: value creation, value proposition, value capture, value delivery and value communication (Rayna and Striukova, 2016). Value creation is a core element of the business model, where value is captured through mechanisms that include core competencies, key resources, governance, complementary assets and value networks. The value proposition is another core element of the business model, offering goods and services to the market and dictating prices and delivery methods. Value capture is the ability of the business to benefit from the value created. Value delivery is the delivery of created value to customers through distribution channels. Value communication is how the company communicates with its customers and partners about its products, services and created value.

Relational resources

Relational resources in business model innovation include resources obtained from establishing and maintaining relationships with external stakeholders (Fu, 2015). In recent years, scholars have studied the mechanism of relational resources on business model innovation, and concluded that business model innovation is promoted through mediating variables such as improving the absorptive, learning, and creative capacities of enterprises (Ziółkowska, 2014). Different types of relational resources have different effects on business model innovation (Story et al., 2009). Research-based on resource base theory suggests that relational resources provide scarce, valuable, irreplaceable, and hard-to-imitate resources that enhance competitive advantage and innovation (Lavie, 2006; Dyer et al., 2003). Research-based on dynamic capabilities theory suggests that relational resources provide the ability to perceive, access, integrate, transform, and utilize external resources, which facilitates business model innovation (Demil & Lecocq, 2010; Doz & Kosonen, 2010). Research-based

on social network theory suggests that relational resources provide societal resources such as information, trust, and reputation, enhancing social influence and innovation (Demil et al., 2015; Zott et al., 2011). Taken together, relational resources are a key factor influencing business model innovation.

Digital technology

The digital economy is leading changes and innovations in various industries, and digital technology, as its core element, influences the paths of value proposition, value transfer and value acquisition of business model innovation through mechanisms such as reducing the threshold and cost of business model innovation, enhancing the motivation of innovation and expanding the innovation space (Osterwalder et al., 2010; Teece, 2010; Zott et al., 2011). Digital technology includes the internet, big data, artificial intelligence, the internet of things, blockchain and so on, through digital technology can improve the ability of enterprises to obtain market information and so on, increase the efficiency of enterprises to expand the market and so on (Chesbrough, 2010; Amit and Zott, 2012; Foss and Saebi, 2017). In addition, digital technology affects value proposition, value delivery and value capture of business model innovation in different ways. Digital technologies can influence value propositions by, firstly, improving the performance, quality and safety of products or services, e.g., artificial intelligence can improve the accuracy and efficiency of medical diagnosis; secondly, reducing the cost, price and risk of products or services, e.g., cloud computing can reduce the information technology inputs and maintenance costs of firms; and, thirdly, increasing the diversity, personalization and customization of products or services, e.g., big data can provide personalized recommendations and offers based on customer preferences and behaviors; and fourthly, creating new features, experiences and value of a product or service, e.g.

virtual reality can provide customers with immersive entertainment and educational experiences (Bharadwaj et al., 2013; Lusch and Nambisan, 2015). Digital technologies can impact value delivery by, first, increasing channel reach, efficiency and interactivity, e.g., e-commerce allows customers to shop and pay from anywhere at any time; second, increasing relationship stability, loyalty and satisfaction, e.g., social media allows customers to communicate and share with businesses and other customers; and, third, increasing activity coordination, flexibility and innovation, for example, the Internet of Things allows firms to monitor and adjust the operational status and quality of products or services in real-time (Zott and Amit, 2010; Teece, 2018). Digital technologies can affect value capture by first, increasing the diversity, flexibility, and sustainability of revenue sources, e.g., the platform economy allows firms to derive revenues from commissions, advertising, and other sources from a variety of sources; second, reducing the fixedness, complexity, and uncertainty of cost structures, e.g., the sharing economy allows firms to utilize idle resources to reduce asset inputs and operating costs; and, third, altering the profit model's logic, structure and distribution, e.g. the subscription economy allows firms to shift from one-off transactions to long-term relationships with fees based on usage (Baden-Fuller and Haefliger, 2013; Casadesus-Masanell and Zhu, 2013).

Long-tail theory

The long-tail theory refers to the idea that non-popular products or services customer together can form a large market that rivals the popular market (Anderson, 2008). In the internet era, the diversification and personalization of consumer needs and the use of digital technologies by firms to reduce costs and increase efficiency have made the long-tail theory a key factor in business model innovation (Rochet et al., 2003). Long-tail theory can facilitate business model

innovation based on platform or network effects, as well as value-based innovation or blue ocean strategies (Pisano et al., 2014). Enterprises should use the long-tail theory to guide business model innovation and choose appropriate strategies according to different contexts strategies and methods.

VARIM model

Business model innovation is a strategic choice of a firm to meet the demand created by changing its products or services, revenue sources, partners and cost structure to achieve competitive advantage and high profitability. However, business model innovation is not always successful and some companies fail due to lack of market, customer or competitor understanding, reliance on existing models, and lack of implementation and evaluation mechanisms (Clauss, 2017). Successful business models need to fulfill the following five elements:

1. Value: the value provided to customers or other stakeholders, e.g., functional, emotional, the social value.
2. Adaptability: the ability of the business model to adapt to changes in the market environment and customer needs, such as opportunity identification, threat response, and change prediction.
3. Rareness: characteristics or advantages that are different from competitors, such as product differentiation, resource uniqueness, and relationship network advantages.
4. Inimitability: the ability to prevent or delay imitation or substitution by competitors, e.g., patent protection, intellectual and technological complexity, and cultural and institutional barriers.
5. Monetization: the ability to convert value into revenue and profit, e.g., pricing strategy, revenue streams, cost structure, margins, etc.

The VARIM model proposed by Afuah Allan (2014) analyses and scores and compares the business model innovations of Apple, Amazon, Netflix, etc. The feasibility of the VARIM model has been tested in practice. The feasibility of VARIM model has been tested in practice, but there is still a gap in the research on business model innovation of snack food production enterprises. The purpose of this paper is to combine the impact of relational resources, digital technology and long-tail theory on the business model innovation of small snack food production enterprises in China, to design a questionnaire for evaluating the impact of business model innovation of small snack food production enterprises in China by using the VARIM model, and to establish a set of evaluation framework research models.

METHODOLOGY

This paper examines the business model innovation of small snack food production enterprises in China, choosing small enterprises that meet the criteria in Henan, Hubei and Sichuan provinces as case studies. The industries in which these firms operate are highly competitive and fast-changing, requiring constant innovation to adapt to the market and environment. They face challenges such as resources, technology, and consumer demand, but also share common opportunities. The research method is based on the VARIM model, which designs questionnaires from five aspects, combines the influence of other factors, collects the business model innovation situation and evaluation of enterprises, and conducts empirical analysis. This paper only designed a valid questionnaire, and did not involve the specific implementation and empirical analysis process.

Conducting a questionnaire involves the following key steps:

1. A questionnaire involving three sections was developed based on theories and classifications related to business model innovation and the VARIM model. The first section covers basic information about the enterprise, including its name, size, industry and location. The second section details the specifics of the business model innovation, such as whether there has been any business model innovation, the type, scope, frequency and duration of the innovation, and so on. The third section is about the evaluation of the business model innovation, including the enterprise's satisfaction, recognition and impact of the innovation, as well as the evaluation based on the VARIM model.
 2. Determining the form and format of the questionnaire is also an important aspect. Depending on the content and structure of the questionnaire, a suitable form and format is selected. In this paper, self-administered and multiple-choice questionnaires were mainly used to facilitate completion and statistical analysis by the respondents.
 3. At the stage of specifying the sample and number of questionnaires, it is necessary to make a suitable choice according to the research objectives and objects. In this paper, the non-probability sampling method is used to select qualified small snack food production enterprises as questionnaire samples by searching the Internet, interviewing experts and analyzing cases. After the survey, a total of 30 small casual food production enterprises in Henan, Hubei and Sichuan provinces were selected as samples, and 10 questionnaires were issued to each enterprise, totaling 300 copies were distributed.
 4. It is equally important to determine how the questionnaires are to be distributed and returned. Depending on the number and type of samples, appropriate distribution and collection methods are chosen to increase the coverage and recovery rate of the questionnaire. Web-based distribution involves sending a link or attachment to the surveyed company's managers and employees via email or WeChat. For on-site visits, paper questionnaires are delivered to managers and employees in person or by proxy at the office or production site of the surveyed company.
 5. Organizing and analyzing the collected data is the final crucial step. The data are cleaned and screened according to the content and structure of the questionnaire. Data cleaning mainly includes checking the completeness, validity, consistency and accuracy of the questionnaire and excluding invalid or incorrect data. Data analysis is mainly carried out using statistical analysis software such as SPSS, Excel, etc. for descriptive statistics, correlation analysis and regression analysis to verify the hypotheses and draw the corresponding conclusions.
- The research framework of this paper can be summarized as follows: the key factors affecting business model innovation, namely relational resources, digital technology and the long tail theory, are used as independent variables, with business model innovation as the dependent variable, and the VARIM model is used to assess the effect of the independent variables on the dependent variable. The research framework of this paper is shown in Figure 1:

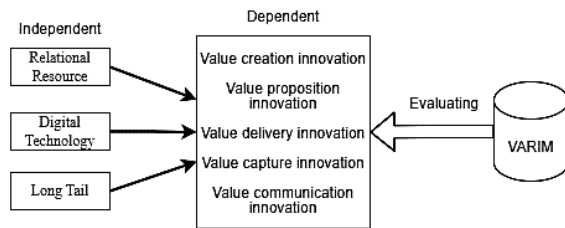


Figure 1 shows the research framework of the study

Questionnaire design

The questionnaire in this paper is designed to explore the business model innovation situation and evaluation results of small snack food production enterprises in China, with the key influencing factors being relational resources, digital technology, and long tail theory. The questionnaire design follows the principles of simplicity, precision, focus, completeness, neutrality, and acceptability, and avoids sensitive, leading, repetitive, similar, and ambiguous questions, while taking into account respondents' characteristics and interests. The questionnaire process included determining the content structure, writing questions and options, determining code numbers, reviewing the test results, and revising and refining. The questionnaire is based on the VARIM model, combining relational resources, digital technology, and long-tail theory, and designing questions from five aspects: value, adaptability, scarcity, inimitability, and monetization, to understand value creation innovation, value proposition innovation, and other business model innovation activities. The questionnaire is based on multiple-choice questions, supplemented by fill-in-the-blanks questions, with fewer narrative questions. Multiple choice questions are divided into single and multiple choice, providing sufficient and non-repeated options with options such as other or don't know. Fill-in-the-blank questions are used to collect basic information and opinions and suggestions. The preliminary design of the questionnaire is shown below:

Questionnaire on Business Model Innovation for small snack food production enterprises

Part I: Basic Information

1. The name of your business is (fill-in-the-blank):_____
2. Which of the following industries does your business belong to (single choice):
 - A. pastries
 - B. biscuits
 - C. puffed food
 - D. nuts
 - E. food preserved in sugar or honey
 - F. Other (specify)_____
3. Which of the following ranges does the number of employees in your organization fall into (single choice)?
 - A. Less than 20
 - B. 20-300 persons
 - C. 300-1000 persons
 - D. 1000 persons
4. Which of the following ranges does your business's average annual operating income fall into (single choice):
 - A. Less than 3 million Yuan
 - B. 3-20 million Yuan
 - C. 20-40 million Yuan
 - D. Over 40 million Yuan
5. Which of the following provinces is your business located in (single choice):
 - A. He'nan
 - B. Hubei
 - C. Sichuan
 - D. Other (specify)_____
6. The position you hold in the business is (fill-in-the-blank)_____

Part II: Business model innovation situation

6. Has your organization undertaken any business model innovation (single choice):
 - A. be
 - B. clogged
 - C. I don't know.
 - C. Long tail theory, i.e. using the Internet platform to satisfy consumers' personalized and diversified needs, creating a market characterized by a concentrated head and a fragmented tail.
 - D. Other (specify)_____
7. If you answered yes, which of the following types of business model innovations does your organization undertake? (Multiple choice):
 - A. Value-creating innovations, i.e., changing the use value of a product or service to provide a more valuable solution.
 - B. Value proposition innovation, i.e., a change in the price or delivery of a product or service that enhances the consumer experience.
 - C. Value delivery innovation, i.e., a change in the way a product or service is delivered that improves the efficiency of delivery or experience.
 - D. Value capture innovation, i.e., a change in the revenue stream or cost structure of a product or service that improves profitability or competitiveness.
 - E. Value communication innovation, i.e., a change in the way a product or service is communicated that increases brand awareness or loyalty.
 - F. Other (specify)_____
8. If your answer is yes, which of the following aspects of business model innovation does your organization undertake (multiple choice):
 - A. Relational resources, i.e., using the network of relationships with stakeholders to obtain additional information, resources and support.
 - B. Digital technology, i.e. the use of computers, networks, mobile devices and other technological means to achieve informatization, intelligence and internalization.
 9. If your answer is yes, what is the scope of business model innovation in your organization (single choice):
 - A. entire enterprise
 - B. Selected products or services
 - C. Selected sectors or processes
 - D. Other (specify)_____
 10. If your answer is yes, how often does your organization undertake business model innovation (single choice):
 - A. More than once a year
 - B. Once a year
 - C. Every two years
 - D. More than once every three years
 - E. unscheduled
 11. If you answered yes, when was the last time your organization made a business model innovation? (Single choice):
 - A. 2023 onwards
 - B. 2022
 - C. 2021
 - D. By 2020

Part III: Evaluation of business model innovation

12. If your organization has carried out business model innovation, how satisfied are you with it? (Single choice):
 - A. extremely happy
 - B. more satisfied
 - C. Generally satisfactory
 - D. not very satisfactory
 - E. Very dissatisfied

13. If your organization has carried out business model innovation, how well do you recognize business model innovation? (Single choice):
 - A. It's very much recognized.
 - B. relatively speaking
 - C. General recognition
 - D. Not really.
 - E. Strongly disapproves.
14. Assuming that you already understand the VARIM model, please answer the following questions based on your organization's actual situation (single choice):
15. How has the company's market share changed after implementing business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
16. What are the changes in the benefits provided to customers relative to competitors after implementing business model innovations?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
17. How has the company's reputation and image changed after implementing the business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
18. How has the number and diversity of new products or services offered by the company changed as a result of implementing the business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
19. How have the new products changed in terms of revenue for the company after the implementation of the business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
20. How has the company's ability to provide valuable products or services to customers changed in terms of flexibility after implementing business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
21. How did the implementation of business model innovation change the extent to which the company's revenue level was higher than that of its competitors or closed the gap between competitors?
 - A. significantly higher
 - B. slightly higher
 - C. no change
 - D. slightly lower
 - E. significantly lower
22. How has the degree of differentiation of the company's products or services from its competitors changed after implementing business model innovation?
 - A. significantly higher
 - B. slightly higher
 - C. no change
 - D. slightly lower
 - E. significantly lower

23. How has the number of competitors with substitute products changed after implementing the business model innovation?
 - A. Significant decrease
 - B. Slight decrease
 - C. No change
 - D. Slight increase
 - E. Significant increase
24. How has the amount of intellectual property owned by the company changed after the implementation of the business model innovation?
 - A. significantly higher
 - B. slightly higher
 - C. no change
 - D. slightly lower
 - E. significantly lower
25. How has the implementation of business model innovation changed the number of resources the company has that are difficult for competitors to access?
 - A. significantly higher
 - B. slightly higher
 - C. no change
 - D. slightly lower
 - E. significantly lower
26. How has the implementation of business model innovation changed the number of business activities that the company can carry out and that are difficult for competitors to carry out?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
27. How has the number of revenue sources of the company changed after the implementation of the business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
28. How has the number of customers with a high willingness to pay for the products or services offered by the company changed after the implementation of the business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower
29. How has the company's return on capital changed after implementing business model innovation?
 - A. Significantly higher
 - B. Slightly higher
 - C. No change
 - D. Slightly lower
 - E. Significantly lower

CONCLUSION AND RECOMMENDATIONS

This paper explores the significance and impact of business model innovation on small-scale casual food production enterprises in China, and finds that business model innovation can help enterprises cope with changes in market competition and consumer demand, enhance core competitiveness, and achieve sustained growth and development, as well as help to realize a balance between value creation and value capture, and to improve profitability and efficiency. There are some limitations and shortcomings in this paper, and further field surveys and data analyses are needed to expand the research objects and samples and enhance the universality and representativeness of the study. Based on the results of the study, the government should strengthen the regulation and supervision of the snack food industry and provide policy support and incentives, and enterprises should formulate clear business model innovation strategies and target plans, and make full use of resources, digital technology and other influencing factors to carry out innovation activities to improve performance.

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FACTORS INFLUENCING THE OUTCOMES OF COMMERCIALY-ORIENTED ACADEMIC-INDUSTRY ENTREPRENEURIAL COLLABORATIONS

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ABSTRACT

This study seeks to analyse the experience of academicians from foreign branch campuses and private universities in Malaysia and point out the multi-level factors that influence the outcomes of commercially-oriented academic-industry entrepreneurial collaborations. This study is cross-sectional and follows an explanatory factor analysis research design. Data was collected from 510 academics from 36 foreign branch campus universities and private universities using a simple random probability sampling method. First, only two multi-level factors, 'age' and 'readiness to collaborate,' are significant when testing the relationship between cross-functional engagement and the performance factor 'effective knowledge transfer'. Second, only two multi-level factors, 'age' and 'readiness to collaborate,' are significant when testing the relationship between cross-functional engagement and the performance factor 'effective knowledge transfer'. It categorises the various types of commercially-oriented academic-industry collaboration activities. Secondly, it illustrates the consequences of each kind of commercially-oriented academic-industry collaboration. Lastly, it measures the performance of commercially-oriented academic-industry collaboration against the performance variables in developing nations like Malaysia.

INTRODUCTION

This paper reports the findings on the factors influencing the outcomes of commercially oriented academic-industry entrepreneurial collaborations using theoretical approaches, specifically, the socio-psychological, the behavioural, and the resource-based view and the organisational learning. All over the world, universities are critical participating stakeholders in nations via participation in academic entrepreneurial undertakings whilst performing their traditional duties of knowledge dissemination (teaching), knowledge generation (research) as well as carrying out administrative and management functions (Laukkanen, 2003; Venkataraman, MacMillan and McGrath, 1992). At the topmost level, governments have been instituting policies geared toward commercialisation of knowledge as a pathway to achieving national competitiveness and innovation successes via academic-industry entrepreneurial collaborations across academic disciplines (Bianchini et al., 2016; Bikard et al., 2019).

Furthermore, engagement in commercialising Academic Intellectual Property (AIP) is now regarded as another avenue to stimulate economic growth and development (Huges et al., 2016). Inadvertently, university academicians and management teams are under some degree of pressure to seek out academic-industry entrepreneurial collaborations while keeping in mind the need for project viability and a decent Return on Investment (ROI) (Czarnitzki et al., 2015; Czarnitzki et al., 2015) to justify the various entrepreneurial academic-industry collaborative activities (Hottenrott and Lawson, 2017). Globally, previous studies on academic-industry entrepreneurial collaborations have illustrated consistent challenges in establishing and operating these engagements (Barbieri et al., 2018).

One possible reason could be that the participating universities or the industries are themselves not monolithic, with differences

existing between the academic disciplines and various industrial entities (Peças and Henriques, 2006; Rosli et al., 2018; Wirsich et al., 2016). The participants in academic-industry entrepreneurial collaborations have each a plethora of diverse goals, motivations, cultures, and timelines, as well as divergent expectations for outcomes (Bern, 2018; Fraser and Mancl, 2017; Garousi et al., 2019).

This study aims to analyze the experiences of academicians from foreign branch campuses and private universities in Malaysia, with a specific focus on commercially-oriented academic-industry entrepreneurial collaborations. The objective is to identify and examine the multi-level factors that influence the outcomes of these collaborations. Malaysia has been chosen as the location of this study because globally, this country is a top-tier destination for higher education. In it also has various types of tertiary institutions, namely, government, private and foreign branch campuses. Furthermore, the universities involved in the aforementioned academic-industry entrepreneurial collaborations receive numerous benefits: knowledge sharing, access to financial resources, intellectual property protection, and technical know-how support (Schaeffer, Öcalan-Özel, Pénin, 2020).

In this study we advance new understanding on commercially-oriented academic-industry entrepreneurial collaborative initiatives by exploring various schools of thought on factors affecting it, namely, individual level factors (Azjen, 1988; Bolton and Lane, 2012; Covin & Slevin, 1989), organisational level factors (Chiva et al., 2007; Gomez et al., 2004) and inter-organisational level factors (Garstka et al., 2012) that influence academicians' involvement, performance and outcomes (Calvert and Patel, 2003; D'Este and Patel, 2007; Glassman et al., 2003). All this is done with a sample of 510 academicians from private universities in Malaysia using the aforementioned theoretical approaches to entrepreneurship in the context of commercially-oriented academic-industry

entrepreneurial collaborations. The rationale for our argument being: First, the development and utilisation of appropriate frameworks will enable academicians involved to overcome challenges to get best possible outcomes for long-term project sustainability. Second, each sanctioned university-industry entrepreneurial collaboration is unique thus need different forms for safety value mechanisms to work out.

Thus, the following study aims:

- to establish the various forms of commercial-oriented academic-industry entrepreneurial collaborations
- to find out the multi-level factors that influence academicians' engagement in these collaborations

This paper presents several notable contributions. Firstly, it enhances the methodological approach used in prior studies by expanding the sample size to encompass all private universities within Malaysia, thereby providing a more comprehensive analysis. Second, it identifies the various antecedents and consequences of commercially oriented academic-industry entrepreneurial collaborations. Third, this study utilised primary data as opposed to secondary panel data. Fourth, it identifies how multi-level factors influence the outcomes of commercial-oriented academic-industry entrepreneurial collaborations in developing nations like Malaysia. The results revealed that enhanced reputation and resources and effective knowledge transfer significantly affect academicians' engagement in commercial-oriented academic-industry entrepreneurial partnerships in developing countries.

This section provides an overview of the paper's structure. The following section reviews the theories employed in the study and explains how hypotheses were developed. It also discusses the methodology, including data collection and analysis processes. Lastly, the final section elaborates on the theoretical and managerial implications derived from the conclusions.

THEORETICAL REVIEW AND HYPOTHESES DEVELOPMENT

Social-psychological approach to entrepreneurship

Derived from the realm of psychology, an associated concept suggests that individuals and the broader community are interrelated. This implies that individuals are driven to fulfill the needs of the community as a means to achieve their own objectives. Two academic branches emerged, namely, psychologists focused on sociology (Bolton and Lane, 2012; Covin and Slevin, 1989; Rauch et al., 2009) and psychologists focused on psychology (Ajzen, 1985; Ajzen and Fishbein, 2005; Sheppard et al, 1988) combine to become Socio-psychology.

Behavioural approach to entrepreneurship

This approach focuses on the environmental situation and stimulates entrepreneurs' responses that enable them in activities geared towards new venture creation (Byrgave and Hofer, 1991). Previous studies illustrate how behaviours of the entrepreneurs (their actions instead of who they are and determine the various conditions impact their participation in entrepreneurial undertakings (Gartner, 1988).

Resource-based view approach to entrepreneurship

Supporters of this theory argue some firms perform better than others in their business eco-system, a phenomenon called competitive advantage due to their unique tangible and intangible capabilities and resources (Barney, 1991; Amit and Shoemaker, 1993).

Organisational learning approach to entrepreneurship

This approach looks at how individuals and organisations utilise knowledge in their possession. It's of the notion that your performance is based on how they utilise their

situations by creating, exploiting, retaining and transferring knowledge (Crossan et al., 1999). The key takeaway from here is that effective organisational learning must be management-driven and goal-oriented.

Commercially-oriented academic-industry entrepreneurial collaborations

This study utilised survey instruments to measure the academicians' involvement in seventeen activities, as shown in Table 1.

Table 1 Commercially-oriented academic-industry entrepreneurial collaborations activities

Form of collaboration	Activities
Teaching-related	<ol style="list-style-type: none"> 1. External teaching for financial reward 2. Initiating the development of new degree programs with advice from industry 3. Placing students as trainees in the industry 4. Conducting seminars and training sessions for industry 5. Teaching a subject that involves significant interactions with industry (for example, capstone/ final year projects, guest lectures) 6. Sitting on the committee of industry/ trade bodies.
Research-related	<ol style="list-style-type: none"> 1. Research-based consultancy for industry through the university 2. Research-based consultancy privately (but without forming a company) 3. Joint-research projects with industry 4. Developing products/services with the potential for commercialisation 5. Providing research-related assistance to small business owners 6. Working in the industry while being attached to the university 7. Acquiring funding from government, non-governmental or international bodies, through collaborations with industry partners
Company-creation related	<ol style="list-style-type: none"> 1. Contributing to the formation of university centres designed to carry out commercialisation activities 2. Contributing to the formation of spin-off company/(s) (university is the owner) 3. Contributing to the establishment of university incubators and/or science parks 4. Forming joint-venture/(s) privately through collaboration with industry 5. Forming own company/(s)

We seek to point out the key determinants of academicians involvement and performance in commercially-oriented academic-industry entrepreneurial collaborations activities analysed against specific multi-level factors against the hypothesized constructs below. Therefore, we hypothesize:

H₁: The engagement of academics in commercially oriented entrepreneurial collaborations mediates the relationship between multi-level factors and the performance variable of enhanced reputations and resources.

H₂: The engagement of academics in commercially oriented entrepreneurial collaboration mediates the relations between the multi-level factors and the performance variable of influential knowledge transfer.

METHODOLOGY

Study design and population sample

In this study, the researchers utilised a cross-sectional survey design based on a sample of 510 full-time academicians from private universities foreign branch campus universities and private universities form part of a statistical population of 13,737 from the Malaysian Ministry of Higher Education data bank (MoHE, 2012). A criteria was developed for the selection of target respondents in the present study, namely, Respondent must be a full-time employee of the eligible academic institution in Malaysia; Must holds a standard academic rank and Must give consent to be a participant in the proposed study. All participants were given 90 days to complete

the self-completing survey questionnaire. After the elapse of this time period we sent out reminder emails in which we requested them to return copies of completed questionnaires.

Measurements and questionnaire

The research employs a survey questionnaire as its primary data collection tool based on pilot studies indicating its effectiveness and efficiency. The survey aims to measure the perceptions of academicians regarding commercially-oriented academic-industry collaboration activities, with a focus on several key variables. These variables include academics' readiness to collaborate with industry, their individual entrepreneurial orientation, the capability of their organizations to learn, the entrepreneurial orientation at the organizational level, the strength of inter-organizational ties, and the performance of the collaborations. The survey consists of items that assess these theoretical constructs, encompassing demographic characteristics, social-psychological factors, organizational-level factors, inter-organizational factors, commercially-oriented academic-industry collaboration activities, and the performance of such collaborations.

The measurement scales used in the study were adapted from validated data collection tools employed in previous research. To capture responses related to multi-level factors, a five-point Likert rating scale was utilized. The scale ranged from (1) Strongly disagree to (2) Disagree, (3) Neither agree nor disagree, (4) Agree, and (5) Strongly agree. Regarding the scales measuring academicians' engagement in commercially-oriented academic-industry collaboration

activities, a four-point level of participation Likert rating was used. The rating options included (1) No, never, (2) Yes, engaged in the last 12 months, (3) Yes, engaged in the last 3 years, and (4) Yes, engaged in both the last 12 months and 3 years..

Data management and analysis

After the 90-day period, 5000 questionnaires were distributed, and out of those, a total of 538 questionnaires were returned. The collected questionnaires underwent screening for missing values and multivariate outliers using the Statistical Package for Social Sciences (SPSS) 19.0 software. As a result, only 510 questionnaires were deemed usable. This indicates a final response rate of 10.2 percent. To investigate the hypothesized relationships among the variables being studied, the data from the questionnaire was subjected to factor analysis, reliability testing, analysis of variance, and multiple regression analysis.

RESULTS

H₁: The engagement of academicians in commercially oriented entrepreneurial collaborations mediates the relationship between multi-level factors and the performance variable of enhanced reputations and resources.

Sobel test results revealed that all the three multi-level factors and the performance variable 'enhanced reputation and resources' had cross-functional engagement as a significant indicator. These factors are academic attainment', 'readiness to collaborate', and 'collaborative environment'. See Table 2.

Table 2 The results summary of mediated regression testing of cross-functional engagement as a mediator between multi-Level factors and enhanced reputation and resources.

	Model 1 Reputation & Resources (Without Mediator)	Model 2 Cross-functional	Model 3 Reputation & Resources (With Mediator)	Sobel Test of Significance
(Constant)				
Gender	.055	-.013	.021	
Age	.037***	.012/.042	.220***	
Academic	.048***	.453***/.054	-.237***	2.626***
Position	.039	-.114**/.045	.080	
Innovative & Risk-taking	.043	.035	-.059	
Readiness to Collaborate	.044***	.146***/.050	.206***	2.008**
Proactive	.046	.021	-.027	
Learning Orientation	.052***	.038	-.257***	
Collaborative Purpose	.048***	.048	.321***	
Collaborative Environment	.055**	.217*/.062	-.143***	2.170**
Breadth of cross-functional			.174***	

Note: *** represents significant level at 0.01 or below; ** represents significant level at 0.05 or below; * represents significant level at 0.1 or below

H₂: The engagement of academics in commercially oriented entrepreneurial collaboration mediates the relations between the multi-level factors and the performance variable of influential knowledge transfer.

The Sobel test results revealed that only two multi-level factors, 'age' and 'readiness to collaborate,' are significant when testing the relationship between cross-functional engagement and the performance factor 'effective knowledge transfer. See Table 3.

Table 3 The results summary of mediated regression testing of cross-functional engagement as a mediator between multi-level factors and effective knowledge transfer

	Model 1 Knowledge Transfer (Without Mediator)	Model 2 Cross-functional	Model 3 Knowledge Transfer (With Mediator)	Sobel Test of Significance
(Constant)				
Gender	-.021	-.013	-.020	
Age	.110**	.012/.042	.109**	
Academic	.010	.453***/.054	-.039	
Position	.021	-.114**/.045	.033	
Innovative & Risk-taking	.035	.035	.031	
Readiness to Collaborate	.140***	.146***/.050	.145***	2.529***
Proactive	.020	.021	.017	
Learning Orientation	-.073	.038	-.077	
Collaborative Purpose	.289***	.048	.284***	
Collaborative Environment	.042	.217*/.062	.031	
Breadth of cross-functional			.107**	

Note: *** represents significant level at 0.01 or below; ** represents significant level at 0.05 or below; * represents significant level at 0.1 or below

DISCUSSION

In this study, hypothesis H_1 was subjected to a test of multiple regression analysis. The results revealed that the only activities with a positively significant relationship with the performance variable under study are research-related.

This finding aligns with other studies that attributed successful academic-industry entrepreneurial collaborations accruing benefits for the parties involved. Well documented benefits include; access to cutting edge technology and facilities, access to knowledge and technical specialists, access to intellectual property, enhanced institutional reputation and asset acquisition, mentoring of skilled human resources and driving sustainable economic growth and development (D'Este et al, 2019; Schaeffer et al., 2020; Thursby et al., 2010; Tijssen et al., 2016).

In this study, hypothesis H_2 was subjected to a test of multiple regression analysis. The results revealed only two activities, teaching-related and research-related, have a significant positive relationship with the performance variable. This phenomenon is attributed to organisational learning attained through organisational systems and management team practices (Iorio et al., 2017).

The positive relationship provides empirical evidence that commercially-oriented academic-industry research-related collaboration activities are pathways for effective transfer of knowledge between partners. This is due to the free flow of tangible and intangible resources in an enabling environment that enables acquisition, operationalisation in multiple formats and archiving (Callaert et al., 2015; Blind, Pohlisch and Zi, 2018). A study on academic-industry collaboration innovation in the United Kingdom conducted at the turn of the century revealed that 10% of new products and services went from concept to final product minus significant delays due to university-

driven research and development (R&D) (Mansfield (1998). Furthermore, previous studies found that in addition to the expected financial benefits for commercially-oriented academic-industry collaborations, they also gain unexpected non-financial benefits from engaging in activities co-currently (Bianchini et al., 2016; Bilkard et al. 2019).

The positive relationship provides empirical evidence that commercially-oriented academic-industry teaching-related collaboration activities are consistent with findings in previous studies (Dolan et al, 2019; Steyn, 2004). These scholars attributed this to the primary academic function of teaching being a medium for knowledge transfer by skilling schemes at all learning levels and across disciplines. This is because teaching-related activities open the learners to critical thinking skills, dynamic thought processes and an entrepreneurial mindset necessary to encounter the challenges of an increasingly globalised economy with dynamic market forces (Arza and Carattoli, 2017).

CONCLUSION

This study provides empirical evidence that brought to light key emerging trends with respect to age, gender, seniority, nationality and institutional systems in commercially-oriented academic-industry entrepreneurial collaborations activities. 1) academics engagement in these activities is conducted co-currently with their traditional academic roles of teaching, research and administrative; 2) senior-ranked academicians are more likely to engage in various entrepreneurial activities due to their years of experience and networks built; 3) academicians from institutions with robust learning systems, access to financial resources and collaboration networks are more likely to engage in them compared to their peers; 4) individual characteristics and motivations (financial and non-financial) are key drivers of academic engagement.

RESEARCH IMPLICATIONS

The findings highlight issues of concern for researchers, practitioner audiences and policymakers theoretically and policy-managerial implications.

Theoretical implications

The theoretical implications fill essential gaps. First, it categorises the various types of commercially-oriented academic-industry collaboration activities. Second, it illustrates the consequences of each kind of commercially-oriented academic-industry collaboration. Lastly, it measures the performance of commercially-oriented academic-industry collaboration against the performance variables in developing nations like Malaysia.

Policy and Managerial implications

This study has policy and managerial implications based on the empirical evidence collected to highlight the outcomes of commercially-oriented academic-industry collaborations, related policy formulation, necessary support structures and trust-building process commercially-oriented academic-industry collaborations.

According to the findings of Lawson et al. (2019), researchers who hold senior positions and possess PhD qualifications tend to exhibit a greater cultural affinity with industrial partners. As a result, they encounter fewer barriers in terms of their orientation towards commercial activities, making them more inclined to engage in academic-industry collaborations with a commercial focus compared to their counterparts who do not hold PhD qualifications.

As a result of their extensive experience and established networks, senior-ranked academicians are more inclined to participate in a diverse range of entrepreneurial activities. Yet, young researchers have to build up

their reputations by publishing papers and networks before engaging in various entrepreneurial activities.

Firstly, policy makers take time to proactively understand how commercially-oriented academic-industry collaborations work in order to develop robust Human Resource Management (HRM) policies that take into account the unique demographic characteristics of the end users. Lawson et al. (2019) found that academicians with senior academicians with PhD are culturally closer to industrial partners thus experience lower orientation barriers thus more readily engage in collaborations with third parties than those starting out their academic careers.

Secondly, policymakers must proactively understand the different categorises of commercially-oriented academic-industry collaborations and be able to meet the specific issues addressed in Memorandums of Understanding (MoU) (Manning, 2018). For example, their partnerships must be able to handle the 17 goals of Sustainable Development Goals (SDGs) societal impact while maintaining set academic-industry standards (Arruti and Panos-Castro, 2020).

Thirdly, previous studies (Perkmann et al., 2019; Tennent et al., 2016) highlight the utmost need of the establishment of vibrant and functioning support structures to support academicians involving commercially-oriented academic-industry collaborations. These include; financial resources, non-financial resources, data and access to networks.

Lastly, universities involved in commercially-oriented academic-industry collaborations need to develop mentoring programmes to train their staff involved in these collaborations. During the collaboration life cycle, the participants create social networks, better insights into the needs of involved stakeholders and access to better financial and non-financial resources. This will ultimately result in better optimalization of the bottom-line and overall performance.

Limitations

The study has certain limitations. Firstly, data collection relied on a self-administered survey questionnaire. However, no follow-up interviews were undertaken yet this would have helped us probe the academicians further to understand why they hold particular views. Secondly, the study utilised a limited data sample from all foreign branch campuses and private universities in Malaysia, which makes the findings nation-specific, limiting generalisation of findings to other types of institutions from other countries.

Future research

Firstly, this paper has a single country focus yet the phenomenon of private universities is commonplace in both developed and developing nations. This places limitations on possibilities for theory development.

Therefore, future research into this area might be conducted in a multi-nation context for greater insights. Secondly, the use of quantitative methods of data collection places limits on information gathered from respondents. We recommend that future studies utilise more robust qualitative data collection methods such as one on one interviews in order for respondents to express their views on constructs under study better. Thirdly, this study acknowledges the distinctions between public and private universities, recognizing that entrepreneurship is heavily influenced by contextual factors. Differences can be observed in various aspects of these institutions, including their mission or purpose, ownership, sources of revenue, government controls, and management norms (Lawson et al., 2019). We recommend more studies in this area in the context of private universities. This is because entrepreneurial practices by these institutions have been largely ignored. Lastly, this study is cross-sectional yet it is common knowledge that opinions held by people usually evolve. To this end, we recommend that future studies utilise a longitudinal approach.

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THE IMPACT OF REGULATORY MEASURES AND INTERNAL OVERSIGHT ON THE PERFORMANCE OF REGIONAL FINANCIAL MANAGEMENT INFORMATION SYSTEMS VIA SAP ACCRUAL BASE IMPLEMENTATION

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ABSTRACT

This research aims to examine and elucidate the influence of regulations and internal controls on the efficacy of the regional financial management information system (SIPKD), mediated through the introduction of an accrual-based accounting system. Employing quantitative research methods, a questionnaire was utilized to gather data from 80 respondents in private capacities, including heads of OPDs, Budget User Authorities (KPAs), Budget Technical Implementing Officers (PPTKs), and Expenditure Treasurers across 20 Provincial Government Organizations (OPDs) in Jambi, Indonesia. The collected data underwent analysis using Wrap-PLS 7. The results demonstrated that the implementation of SAP accruals acted as a complete mediator, as direct regulatory measures and internal controls did not significantly impact the SIPKD's performance. However, when mediated through these two external variables, there was a significant positive effect on the SIPKD's performance. These findings imply the necessity of updating local governmental regulations and enhancing internal oversight to align with the SAP accruals policy, thereby achieving performance benchmarks for regional financial management information systems.

INTRODUCTION

The performance of local governments from the financial aspect is a benchmark for the realization of good and clean government. The performance appraisal indicators of local governments can be seen every year in the performance of financial reports. The Regional Government Financial Report (LKPD) annually receives an assessment in the form of an opinion from the Financial Audit Board (BPK). When BPK issues an Unqualified Opinion (WTP) to LKPD, it means that it can be concluded that the financial statements of an entity have been presented fairly and have quality. Four types of opinion will be given by the examiner, namely Unqualified Opinion (WTP), Fair Opinion with Exception (WDP), Unqualified Opinion (TW), and the last statement refusing to give an opinion or Not Giving an Opinion (TMP).

The achievement of financial performance is inseparable from government policies in encouraging every local government organization to implement a government accounting system mandated by law, Ministry of Home Affairs Regulations, Ministry of Finance Regulations (Dewi, 2012; Probahudono, Widayat, & Arifah, 2020); Regional financial reports which are records of all activities and financing using the APBN and APBD for each OPD must be inputted into the financial management information system at the regional level. The information system is created to synergize the local government with the central government at the management level. SIPKD performance measurement is seen from the determinants of financial information systems in the form of regulation (McGowan, Chan, Yurova, Liu, & Wong, 2018), internal control (Rosmalita & Nadirsyah, 2022), and SAP implementation (Probahudono, Widayat, & Arifah, 2020).

In addition, to present quality financial information to users under the plans that have been set, an effort that is considered relevant is needed, namely regional financial supervision (Pujiswara et al., 2014). Regional financial

supervision is a systematic activity shown to make sure that local government financial management runs in line with the plans and provisions of applicable laws and regulations related to all regional rights and obligations within the governance framework.

Monitoring is specifically aimed at preventing potential deviations from the intended objectives. Its purpose lies in aiding the effective and efficient implementation of established policies to achieve predetermined goals (WIDAGDO et al., 2020). Through monitoring, a closely linked activity is created to assess the degree of task completion (Wardhana, 2021), the adherence to leadership policies, and the identification of deviations in work implementation concerning the outcomes of utilizing regional financial accounting information systems. Regional oversight exerts a positive influence on the value of financial reporting and the accountability of local governments (Subekan & Hartoyo, 2012:42). The theoretical foundation of the organization regarding the adoption of SAP accruals, regulations, and internal controls suggests that the organization's reliance on regulatory enforcement endows it with complete authority to implement new policies.

LITERATURE REVIEW

Underlying Theory

Management Theory (Stewardship Theory)

The Stewardship theory delineates a scenario where management is not driven by personal objectives but instead prioritizes the overarching goals for the betterment of the organization. This theory assumes a robust correlation between contentment and the success of an organization. Its applicability extends to accounting research within public sector entities such as governmental bodies and profit-driven organizations (Wahida, 2015). The conceptual framework of Stewardship Theory is specifically tailored

to elucidate the mindset and societal aspects of managers in attaining the objectives of government organizations (Sanjaya, 2017). As an accountability mechanism, Stewardship theory serves to ensure effective oversight, auditing, and reporting, thereby aiding in the accomplishment of organizational objectives (Jefri, 2018), (Jefri, 2018; Jao et al, 2011).

The Stewardship theory depicts a scenario where the manager's interests do not take precedence but are instead focused on the principal or the larger organization. This theory, rooted in dedication and trust, assumes that individuals possess inherent capabilities to act responsibly, exhibit high integrity, and maintain honesty. It perceives management as a capable entity that engages in optimal actions to fulfil the needs of stakeholders. At its core, this theory revolves around trusting those vested with authority, portraying organizational management as responsible stewards dutifully carrying out assigned tasks bestowed by higher-ups (Humphrey., 2020).

According to (Davis, Schoorman, & Donaldson, 1997), Stewardship theory delineates a managerial setting where personal goals are not the primary motivators; instead, the focus remains on achieving the organization's overarching objectives. This theory is founded on psychological and sociological principles, defining executives as stewards who are inclined to act in alignment with the principal's wishes. Moreover, the behavior associated with stewardship remains dedicated to the organization, steadfastly striving to attain its goals (Obohn, O., & Ajibolade, 2017). Researchers employ this theory to explore scenarios where corporate executives, as stewards, are incentivized to act in accordance with their guiding principles (Hay & Cordery, 2018).

Government Accounting System-Accrual Basis

As per the Government Accounting Standards outlined in PP No. 24 of 2005, the Government Accounting System refers to a sequence of

manual or computerized steps encompassing data collection, recording, summarization, and reporting of the government's financial status and transactions (BPKP, 2020; Bayu & Yustikarana, 2019).

Meanwhile, according to Minister of Home Affairs Regulation No. 64 of 2013, the Accrual-Based SAP constitutes a Government Accounting Standard that acknowledges revenue, expenses, assets, debt, and equity in financial reporting based on accruals. It also recognizes income, expenditure, and financing in reporting budget implementation as per the guidelines in the APBD. Notably, La Notte (2017) and La Notte A. V. (2019) emphasize that the application of SAP necessitates a comprehensive understanding among entities responsible for compiling and presenting financial reports in both Central and Regional Governments, alongside their respective agencies.

For the successful implementation of SAP, it becomes imperative to grasp the fundamental rationale underlying government policies. Several factors profoundly influence the government's adoption of accrual-based SAP, namely: (a) Regulations, (b) Systems, and their supporting infrastructure, and (c) Human Resources. Understanding these pivotal aspects is crucial in effectively implementing the SAP system in government operations.

Regional Financial Management Information System (SIPKD)

The Regional Financial Management Information System (SIPKD) stands as an integrated tool employed by local governments to enhance the efficiency of implementing diverse regulations within regional financial management. This system operates based on the fundamental principles of efficiency, economy, effectiveness, transparency, accountability, and audibility, as outlined in the SIPKD Implementation Instructions (2010) issued by the Ministry of Home Affairs in Jakarta, Indonesia. Additionally, SIPKD

represents a tangible form of support from the Ministry of Home Affairs to local governments, aiming to fortify a unified perception of regional financial management systems and procedures. This support aids in interpreting and applying various laws and regulations concerning regional financial management, exemplifying real facilitative actions (Imron & Ritonga, 2018; Hermansyah & Efendi, 2019). The Regional Financial Management Information System (SIPKD) or also known as the Regional Financial Management System (SIMKEUDA) is a system consisting of various programs for the Preparation/Budgeting of the Regional Budget, Financial Administration, Accounting and Preparation of Financial Statements. Performance is the output/result of activities/programs that will be or have been achieved in connection with the use of the budget with measurable quality and quantity (Ministry of Home Affairs Number 15 of 2006 Article 1; Hendri & NR, 2020).

The legal basis for the Regional Financial Management Information System in the implementation and implementation are:

1. Law no. 33 of 2004 concerning the Financial Balance between the Central Government and Regional Governments;
2. PP No. 56 of 2005 concerning Regional Financial Information System;
3. Regulation of the Minister of Finance No. 46 of 2006 concerning Procedures for Submission of Regional Financial Information.

The government administers SIPKD nationally to be used to formulate national fiscal policies and controls, present regional financial information nationally, formulate regional financial policies, such as Balancing Funds, Regional Loans, and controlling budget deficits; and monitor, control and evaluate the funding of Decentralization, Reconcentrate, Assistance Tasks, Regional Loans, and regional budget deficits.

Regulatory

Determination of regulations at the regional level requires a process Regulation. This regulatory approach is a necessity to be able to achieve organizational effectiveness through a meaningful regulatory role. The regulatory process stated above by the regulatory framework as rules for financial reporting in the public sector. The regulatory framework is described as covering 4 (four) different types, but they have coherence in their formation and implementation. The financial reporting rules of public sector organizations include The law, Accounting standards, Accounting practice, and Specific rules" (Collins & Solabomi, 2017). This conception describes a set of regulations needed to achieve the role of regulation in a financial management environment through organizational accounting activities.

Collins & Solabomi (2017) revealed that the need to establish a regulatory framework based on the legal references above is an organizational phenomenon. The regulatory perspective is an organizational need that requires clarity of the process in the formation stage, the establishment of a regulatory framework, and the achievement of regulatory objectives through the implementation stage. The regulatory approach to local government entities is a regulatory framework in the procedure for drafting legal products for the formation of accounting regulations in financial management in local governments.

Internal Control System

Internal monitoring

Understanding of internal control in the objectives and objects of control, namely, to realize the achievement of accountability for the financial statements of public organizations (Jesica Prastiwi & Neem, 2018);. The purpose of the supervision is related to the object of supervision which includes legal products and policies, the implementation of government

administration, and finance (Rahayu & R, 2020). The concept of internal control cannot be separated from the concept of controlling in an organization. The concept of control is put forward as an attempt to convince the organization to move towards the stated goals, if part of the organization is in the wrong direction, the manager or manager tries to find the cause and then arranges things correctly to improve the performance of the regional financial information system (Jesica Prastiwi & Mimba, 2018); (Lestari & Dewi, 2020).

METHODOLOGY

This study used an explanatory survey as a research design. The sampling technique of the population unit was based on a description of the population and research sample (Sekaran, 2013). In this study, there were 20 OPD as a population unit with a population of 152 employees in the finance and planning department, and a sample of 80 respondents (20 OPD X_4 criteria). Determination of the number of sampling in this study using probability sampling method with purposive sampling technique, namely respondents who have the criteria/characteristics as the head of the OPD, Budget User Authorization Officer (KPA), Budget Technical Implementing Officer (PPTK), and Expenditure Treasurer in 20 provincial Regional Apparatus Organizations Jambi. Data collection techniques to answer 7 hypotheses with 2 exogenous variables, 1 mediating intervention variable (Y_1) and 1 endogenous variable (Y_2) using a closed questionnaire with a 5-point Likert scale for measuring question items. Hypothesis analysis tool using Partial Least Square (PLS) with Smart PLS software.

FINDINGS

Loading Factor Test Results

- (1) The research model is the regulatory variable (x_1) $\rightarrow Y_1$ SAP accrual implementation; (2) internal control

$\rightarrow Y_1$ SAP accrual implementation; (3) $X_2 \rightarrow$ SIPKD performance (Y_2); (4) $X_2 \rightarrow Y_2$; (5). $X_1 \rightarrow Y_1 \rightarrow Y_2$ (6). $X_2 \rightarrow Y_1 \rightarrow Y_2$ (7). $Y_1 \rightarrow Y_2$.

- (2) *Validation Results on Outer Loading* or the Loading Factor describes how much the indicators relate to each construct. The results of the analysis show that the value of Convergent validity, the value of the loading factor of regulatory effectiveness, internal control effectiveness, SAP accrual implementation, and SIPKD performance is greater than 0.60. So that all indicators are declared feasible or valid to be used in this study.
- (3) The results of the statistical test show that the AVE value has met the standard and has a good value because it is greater than 0.5. The results of the Composite Reliability value and the Cronbach Alpha value have variable values of $X_1, X_2, Y_1, Y_2 > 0.7$.

Inner Model Testing (PLS)

The assessment of the structural model in Partial Least Squares (PLS) involves evaluating the path coefficient and the dependent variable. The significance of the independent variable's value is determined by examining the t-statistic value associated with each path. To discern direct or indirect effects among variables, the R² evaluation of the inner or structural model is employed.

Upon conducting the test, it was found that the R-Squared value for the Y_1 variable equated to 0.739. This indicates that 73% of the variance in Y_1 , representing social media orientation, is accounted for, while the remaining 27% is influenced by other factors. Additionally, the R-Squared value for the Y_2 variable was determined to be 0.666%. This denotes that 67% of the variance in Y_2 , related to social media orientation, is explained, with the remaining 33% influenced by other factors.

Direct Effect Test Results

$H_1: X_1 \rightarrow Y_1$ (insignificant)

$H_2: X_2 \rightarrow Y_1$ (insignificant)

$H_3: X_1 \rightarrow Y_2$ (insignificant)

$H_4: X_2 \rightarrow Y_2$ (insignificant)

Mediation Test Results

$H_5: X_1 \rightarrow Y_1 \rightarrow Y_2$ (No Mediation)

$H_6: X_2 \rightarrow Y_1 \rightarrow Y_2$ (No Mediation)

$H_7: Y_1 \rightarrow Y_2$ (Significant)

The Stewardship Theory perceives management as a trustworthy entity capable of acting in the public's best interest, aiming to foster bureaucratic reform through the implementation of good governance (Jefri, 2018). The study's analysis highlights that policies represented by regulations and internal control, mediating the implementation of SAP accruals, significantly impact the performance of the Regional Financial Management Information System (SIPKD). This finding underscores the crucial role of effective internal regulations and supervision in implementing SAP-accrual, thereby enhancing SIPKD's performance. These regulatory and control mechanisms are structured in the public's favor and play a strategic role in guiding the principal's behavior towards producing accountable, transparent, clean, and nationally integrated regional financial reports (Singh et al., 2021).

The efficacy of regulatory measures and internal control signifies a manifestation of rational public policies aligned with central government regulations. Within the framework of Stewardship theory, the model of an individual is perceived as someone whose behavior can be shaped to foster collaboration within the organization, exhibiting collective or group behavior that prioritizes the collective good over individual interests, and displaying a willingness to serve (Rosmalita & Nadirsyah, 2021).

The implementation of SAP-accruals for OPD entities is a challenge and requires a quick response from policymakers to make regulations regarding the use of SAP-accruals so that they can encourage each OPD to implement a CASH-based SAP financial reporting system. In line with this policy, it is necessary to have a consistent monitoring system in carrying out the parole as a reviewer of internal reports, acting as a consultative, conducting evaluations, monitoring, and carrying out roles catalyst. If the three determinants are carried out in accordance with the demands of the public interest. Draft *Stewardship Theory* is specially designed to describe the psychology and sociology of managers to achieve the goals of government organizations (Notte & Rhodes, 2020;). Stewardship theory can function as an accountability mechanism to ensure good monitoring, auditing, and reporting to help achieve government goals with the performance of local financial information systems.

The Stewardship theory, as elucidated in this study, suggests that budget managers, acting as stewards, are entrusted to diligently serve the principal—the community. It entails the belief that OPDs (Organizational Performance Departments) have the responsibility to act in the public's interest by executing their duties and functions with diligence. This involves planning and executing budget mandates entrusted to them by credible individuals or institutions, aiming to achieve optimal objectives in budget management. To fulfill this duty, stewards are expected to harness their regulatory capabilities and internal oversight expertise. Leveraging Information System Technology and adhering to accrual-based government accounting standards are integral for efficient and effective management of regional finances, thereby promoting transparent and sound governance practices (Syarienda & Fahlevi, 2019).

CONCLUSION

It can be concluded that the performance of the regional financial management information system (SIPKD) regulation and internal control will contribute positively if the application of the accrual-based financial accounting system is carried out by each composite in the planning and finance section of each regional apparatus organization. As for the regulatory effectiveness was made with elucidation of regulatory objectives, Completeness of Regulatory Formats (SOP), Consistency of Regulatory References, and Consistency in Application of Regulations will be realized for the performance of SIPKD if the implementation of SAP accruals is carried out by the planning and finance department of each regional device organizational entity. Finally Internal control has an important role in the implementation of SAP accruals so that in the context of a supervisory function internal report reviewers, consultative, evaluative, monitoring, and catalytic reports must be carried out regularly.

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Outer loading result

Variable	Indicator	Outer Loading
Regulatory Effectiveness X1	X1.1	0.704
	X1.2	0.910
	X1.3	0.829
	X1.4	0.858
Internal Control Effectiveness (X2)	X2.1	0.623
	X2.2	0.802
	X2.3	0.857
	X2.4	0.899
	X2.5	0.872
SAP Accrual Implementation (Y1)	Y1.1	0.737
	Y1.2	0.784
	Y1.3	0.824
SIPKD Performance (Y2)	Y2.1	0.917
	Y2.2	0.960
	Y2.3	0.858
	Y2.4	0.940
	Y2.5	0.948

Validity and Reliability Test SmartPLS

Variable	Average Variance Extracted (AVE)	Composite Reliability	Cronbach Alpha
Regulatory Effectiveness X1	0.686	0.897	0.844
Internal Control Effectiveness (X2)	0.667	0.908	0.874
SAP Accrual Implementation (Y1)	0.612	0.826	0.684
SIPKD Performance (Y2)	0.857	0.968	0.958

Hypothesis test

The last step of the test using SmartPLS is hypothesis testing and is carried out by looking at the results of the *bootstrapping* value. The following are the results of the data test using SmartPLS bootstrapping.

Hypothesis	Original Sample estimate	Mean of subsamples	Standard Deviation	T-Statistics	P-Value
X1 -> Y1	-0.038	-0.051	0.142	0.264	0.792
X2 -> Y1	0.260	0.279	0.137	0.1890	0.059
X1 -> Y2	0.219	0.224	0.175	1,249	0.212
X2 -> Y2	0.111	0.082	0.127	0.874	0.383
X1 -> Y1 -> Y2	-0.012	-0.026	0.057	0.217	0.828
X2 -> Y1 -> Y2	0.085	0.106	0.074	1.157	0.248
Y1 -> Y2	0.328	0.364	0.150	2.180	0.030

R-Square Value

Variable	R-Square
SAP Accrual Implementation (Y1)	0.739
SIPKD Performance (Y2)	0.669

Source: Primary Data, Processed by researchers in 2021

ANALYSING UNEMPLOYMENT DETERMINANTS IN MALAYSIA USING THE VECM METHODOLOGY

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VECM, short run, long run

ABSTRACT

This research examines the factors influencing unemployment in Malaysia, considering both short-term and long-term perspectives through the utilization of the VECM (Vector Error Correction Model) methodology. After reviewing relevant literature, various macroeconomic indicators such as GDP growth, foreign direct investment, inflation, interest rate, and exchange rate were selected for analysis. Quarterly time series data spanning from (Q1) 2010 to (Q1) 2020 was employed for this study. Applying the VECM approach, the findings uncovered distinct relationships between these variables and unemployment. Specifically, a noteworthy positive correlation was observed between GDP and unemployment, indicating that as GDP increases, unemployment tends to rise as well. Conversely, in the short term, inflation displayed a significantly negative impact on unemployment, suggesting that higher inflation rates might be associated with lower unemployment rates temporarily. In the long run, the study identified a significantly positive relationship between GDP growth and unemployment. Intriguingly, foreign direct investment exhibited a notable increase in unemployment over the long term. Additionally, the causality test highlighted a one-way causal relationship from the identified determinants (GDP, inflation, foreign direct investment) to unemployment. Overall, this research underscores the complex interplay between key macroeconomic indicators and unemployment

in Malaysia. The study's outcomes emphasize the significance of considering both short-term and long-term effects when analyzing the impact of economic variables on unemployment..

INTRODUCTION

Unemployment is one of the major macroeconomic fundamental among other fundamentals like inflation, economic growth, exchange rate and balance of payment. Unemployment defined as labour who are actively searching for employment but can't find one (Romer, 2012). Hence, the higher the percentage of unemployment, the higher the wastage of labour forces in the country. Besides that, unemployment increases during the economic recession while reduces when the economy undergoes a positive growth. The unemployment rate is an indicator to measure unemployment. International Labour Organization (2019) calculates number of the labour force who are unemployed as a percentage of the total labour force.

In 2019-2020, the world suffered from the impact of Covid-19 pandemic. Most of the governments have taken aggressive actions, including the lockdown policy or preferably known as movement control order (MCO) to suppress the adverse impact of the disease. During this period, citizens and foreigners were prohibited for boarding to or from other country. Besides that, the operation of economic activities was forced to stop to reduce the virus from spreading. Thus the world had been undergoing an economic recession due to the disturbance in production (CNBC, 2020).

The extent and duration of the recession hinge on how effectively and cohesively the response to the COVID-19 outbreak is managed. Therefore, estimating the duration of this economic downturn solely based on the development of vaccines is insufficient. Malaysia encountered the outbreak starting from 24 January 2020, initially with three confirmed cases, and witnessed the onset of fatalities, beginning with two cases reported on 17 March 2020.

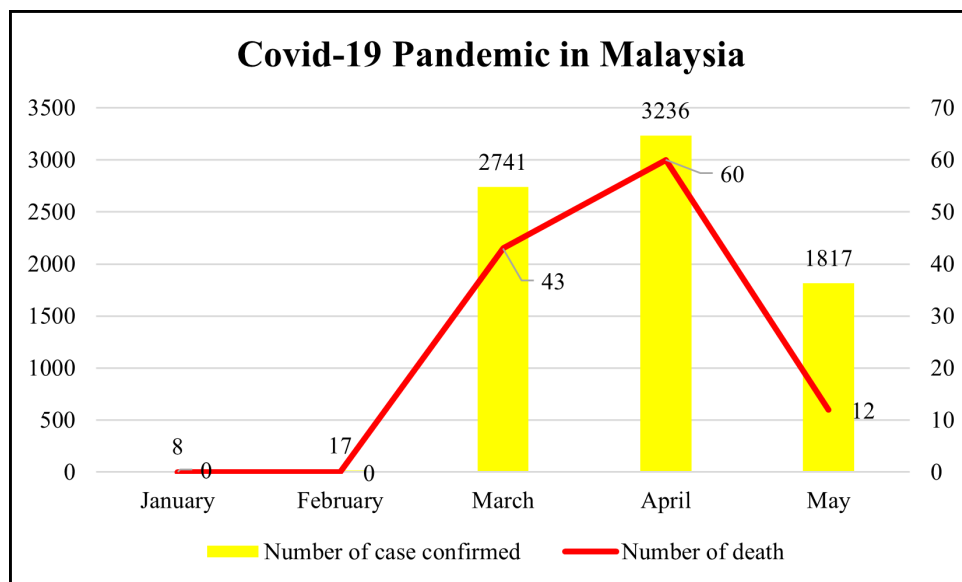


Figure 1 shows Covid-19 Pandemic in Malaysia Sources: Ministry of Health, Malaysia

As a result of the political crisis spanning from 24 February 2020 to 29 February 2020 and the Sri Petaling Tabligh event occurring between 27 February 2020 to 1 March 2020, Malaysia experienced a second wave of COVID-19 outbreaks. The country saw a significant surge in confirmed cases during March 2020. Consequently, the Malaysian government implemented the Movement Control Order (MCO) from 18 March to 31 March 2020. However, despite this initial phase (MCO Phase I), there was no decline in confirmed cases, leading the government to announce MCO Phase II from 1 April 2020 to 14 April 2020. Subsequently, based on advice from the Ministry of Health, the MCO extended to Phase III, lasting from 15 April 2020 to 30 April 2020.

During this period, depicted in Figure 1, the number of confirmed cases reached a peak at 3236, with 60 reported deaths. The collective efforts spanning MCO Phases I to III, spanning around one-and-a-half months, eventually led to a decline in both confirmed cases and fatalities. Consequently, the government initiated a phased reopening of economic activities, implementing specific Standard

Operating Procedures (SOPs). This transitioned into the Conditional Movement Control Order (CMCO) from 3 May 2020 to 9 June 2020, followed by the Recovery Movement Control Order (RMCO) from 10 June 2020 to 31 August 2020, as announced by the government (NST, 2020a; NST, 2020b; NST, 2020c; NST, 2020d; NST, 2020e; NST, 2020f). Nonetheless, the repercussions of the MCO exerted a notable influence on the economy.

The GDP growth during the first quarter of 2020 was 0.7%. This growth has been estimated to achieve 0.5% in 2020 (Bank Negara Malaysia, 2020). Besides that, the firms were forced to be shut down during the MCO period. This situation makes them need to pay for the costs such as rental, utility and wages of the workers without the revenue during this period. Therefore, some small and medium enterprises (SMEs), choose to shut down to reduce their loss. Hence, the demand for labour is driven down. Despite this, the unemployment rate in Malaysia, which was always in full employment condition during these years, achieved a new record of 5% in April 2020.

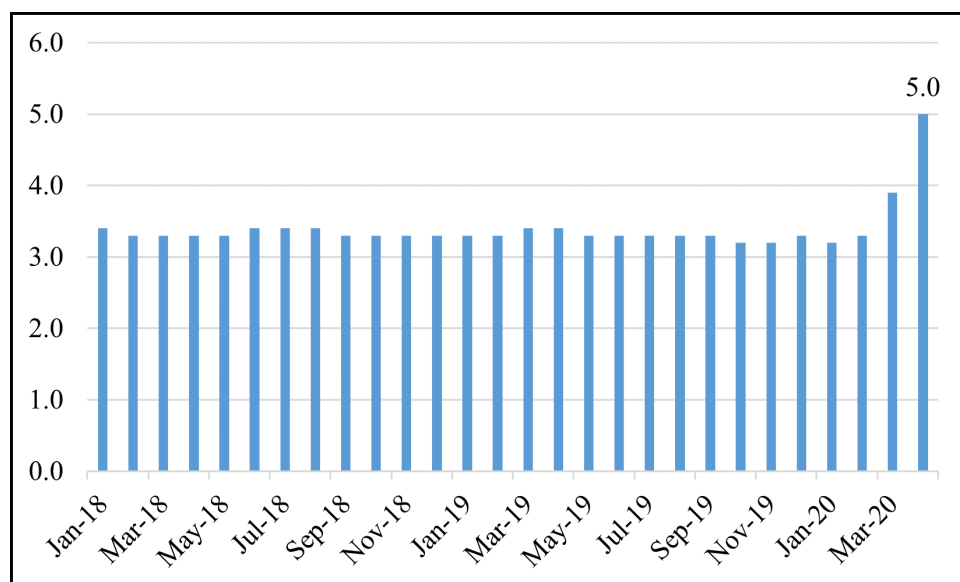


Figure 2 shows *Unemployment rate in Malaysia, January 2018-April 2020*

Source: Bank Negara Malaysia, 2020

Furthermore, the impact of the recession is serious, along with the plunge in global oil prices because of price war in between Saudi and Russia. This situation causes the decline of the commodity price and leads to the uncertainty of the global commodity price. Hence, the weak pressure on the price makes deflation occur, which the inflation rate estimated by Bank Negara Malaysia achieved as -1.5% in 2020 (Bank Negara Malaysia, 2020). Besides that, the political instability in Malaysia reduces the confidence of the foreign investor in Malaysia. This condition confuses the investors with the government policy's vision and mission. The pessimism of the future will reduce foreign investors' interest in foreign direct investment in Malaysia. The reduction of foreign direct investment will lead to a reduction in job opportunities which would eventually increase unemployment in Malaysia. Apart from that, the Overnight Policy Rate (OPR) has already increased from 3% to 2% by Bank Negara Malaysia during 2020 to resume the economy of Malaysia (The Star, 2020a; The Star, 2020b; The Edge Market, 2020). In Malaysia, the lending rate and saving rate set by commercial banks follow the trend of the OPR. When the OPR decreases, the lending and saving rates will decrease. Therefore, the cost of borrowing decreases, and the firm increases the demand for labour. Eventually, unemployment will reduce.

Hence, this study aims to identify what determines unemployment in Malaysia in the short-run and long-run relationship. Furthermore, this study also investigates the causality relationship between the selected determinants and unemployment.

LITERATURE REVIEW

According to Dalziel (1993), unemployment occurred because of the inadequate supply of goods, which the excess demand of goods than the supply of firms. This will lead to higher wages and lower profit conditions. Classical

economists stated that the wage mechanism can overcome unemployment. When there is high unemployment, the reduction in wages can reduce cost and increase demand for labour by firms. Conversely, the wage increment can reduce employment when there is low unemployment. Employment always goes back to the natural rate, which is the equilibrium in the long run. However, Keynes believed wages are sticky, and the wage responded slowly to changes in the labour market (Brue & Grant, 2013). Besides that, the wages, in Keynesian's view, are flexible upward and rigid downward. Hence, the government's intervention is needed to overcome unemployment through the policy.

Thayaparan (2014) claimed that unemployment will decrease by 2.92 units when the GDP increases by 1 unit in Sri Lanka in the long run using the vector error correction model (VECM) to analyse the annual data from 1990 to 2012. Apart from that, AboElsoud, AlQudag and Elish (2019) suggested that GDP per capita had adverse relationship with unemployment in Australia using the VECM model. The result demonstrated that unemployment decreases by 0.01% when the GDP per capita increases by 1% in the long run. Besides that, this negative relationship was significant at a 1% confidence level. In Malaysia, Ngoo and Loi (2011) adopted the quarterly data from 2000 to 2007 to prove the appearance of Okun's law in Malaysia. They stated that Okun's law happened in Malaysia in the long run which result in decreasing unemployment rate by 1.825% when there was 1% in output growth.

Sisay (2019) used the annual data from 1984/85 to 2018/19, a total of 35 years, to identify the relationship between foreign direct investment with unemployment in Pakistan during long run. The result revealed an adverse impact of foreign direct investment on unemployment. Besides that, this negative relationship with foreign direct investment is also supported by research done by Sadikova, Faisal and Resatoglu (2017) in

Russia. In Malaysia's case, Subramanian and Baharumshah (2011) claimed that foreign direct investment reveals a significant adverse long-run relationship with unemployment. The result stated that the unemployment decreases by 0.3502% when there is an increase in 1% of foreign direct investment.

Victor et al. (2018) expounded on the enduring correlation between inflation and unemployment in Hungary, establishing a long-term relationship. They utilized monthly data and VECM methodology to explore this association. Similarly, Touny (2013) employed VECM to investigate macroeconomic variables like inflation and unemployment in India, identifying a significant negative long-run relationship between the two.

Contrarily, Faruoka (2008) asserted the absence of a trade-off relationship in the long run in the Philippines. In Malaysia, Kogid et al. (2011) highlighted a negative unidirectional causal link between inflation and unemployment.

Regarding interest rates, Feldmann (2013) underscored a positive impact of real interest rates on unemployment over the long term, using data from 92 countries. Modeste and Mustafa (2002) supported this by claiming a positive relationship between interest rates and unemployment in the United States, indicating a 0.3% rise in unemployment for

every 1% increase in interest rates. Furuoka and Munir (2014) and Kaur and Nur Asyiqin (2016) both found a long-term association between interest rates and unemployment in Malaysia.

Shifting to the exchange rate's impact on unemployment, Nyahokwe and Ncwadi (2013) analyzed quarterly data and established a positive relationship between real exchange rate volatility and unemployment in South Africa. However, in Nigeria, Osigwe & Ahamba (2016) revealed a contrasting positive effect of the exchange rate on unemployment, indicating a 0.06% decline in unemployment for every 1% increase in the exchange rate, significant at a 5% confidence level. In Malaysia, Nur Azwani, Salwani, Nabilah, and Nur Azliza (2017) confirmed a positive correlation between the exchange rate and unemployment.

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METHODOLOGY

Research Framework

The research model was structured with unemployment as the dependent variable, whereas GDP growth, foreign direct investment, inflation, interest rate, and exchange rate served as the independent variables. The schematic representation of this research framework was depicted in Figure 3.

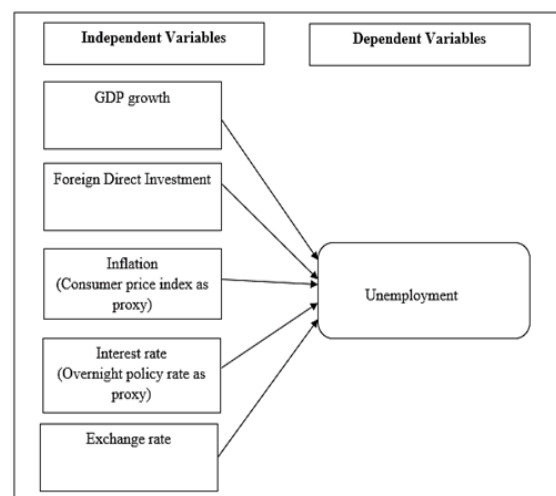


Figure 3 shows that Research Framework

Data Collection

The time series of quarterly data, first quarter (Q1) 2010 to the first quarter (Q1) 2020 was adopted from Bank Negara Malaysia and Ministry of Finance Malaysia. This period was selected because of the period of the Covid-19 outbreak happening in Malaysia, which was during the first quarter of 2020.

Model

Unemployment rate as the dependent variable while the GDP growth, foreign direct investment, interest rate and exchange rate were the independent variables. The Overnight Policy Rate (OPR) was used as a proxy for interest rate, while the consumer price index (CPI) was used as a proxy for inflation. Meanwhile, the exchange rate used the RM/USD. Therefore, the regression model was converted to log:

$$UE_t = \beta_0 + \beta_1 GDP_t + \beta_2 \text{Log}(FDI)_t + \beta_3 \text{Log}(INF)_t + \beta_4 IR_t + \beta_5 \text{Log}(ER)_t + e_t$$

where,

UE represent unemployment, GDP stands for GDP growth, FDI stands for foreign direct investment, INF was inflation, IR stands for interest rate, ER represents exchange rate and e refers to error term.

METHODOLOGY

Unit Root Test

The existence of the spurious regressions should be checked to ensure that the data is stable in the long run. Hence, the model will become not stationary if unit root problem exists. The Augmented Dickey-Fuller Test (ADF) was used. Based on the rule of thumb, the null hypothesis stated that the model in level form exists with a unit root problem

and will fail to be rejected when the P-value was less than 0.05 or the t-estimated was larger than the t-critical. Therefore, the first difference should be applied to the model to solve the unit root problem.

Cointegration Test

The stochastic trends can represent the error when the time series data is non-stationary. The P-value was less than 0.05, indicating that the model was cointegrated. Therefore, several steps must be followed to run the unrestricted cointegration rank test:

1. The order of integration of the variables in the model.
2. To determine the lag length of the model.
3. Identifying the rank of π or the number of cointegrating vectors.
4. To determine weak exogeneity and linear restrictions in the cointegrating vectors.

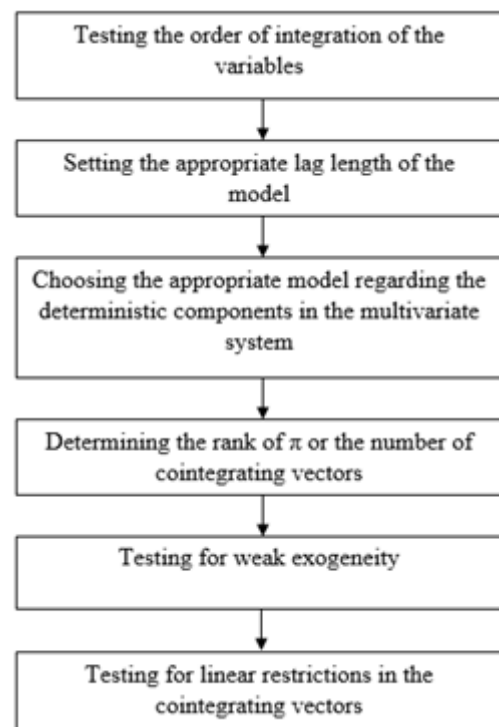


Figure 4 shows *The Order of Johansen Test* (Johansen, 1995)

Vector Error Correction Model (VECM)

VECM demonstrates the short-run and long-run relationship regarding the model. VECM also solves the spurious regression problem. The equation of the VECM model was shown as follows:

$$\Delta U E_t = T_{1t-1} + T_{1t-2} + T_{1t-3} + T_{1t-4} + T_{1t-5} + m_1 ECT_{t-1} + e_t \dots \dots \dots (2)$$

$$\Delta G D P_t = T_{2t-1} + T_{2t-2} + T_{2t-3} + T_{2t-4} + T_{2t-5} + m_2 ECT_{t-1} + e_t \dots \dots \dots (3)$$

$$\Delta F D I_t = T_{3t-1} + T_{3t-2} + T_{3t-3} + T_{3t-4} + T_{3t-5} + m_3 ECT_{t-1} + e_t \dots \dots \dots (4)$$

$$\Delta I N F_t = T_{4t-1} + T_{4t-2} + T_{4t-3} + T_{4t-4} + T_{4t-5} + m_4 ECT_{t-1} + e_t \dots \dots \dots (5)$$

$$\Delta I R_t = T_{5t-1} + T_{5t-2} + T_{5t-3} + T_{5t-4} + T_{5t-5} + m_5 ECT_{t-1} + e_t \dots \dots \dots (6)$$

$$\Delta E X_t = T_{6t-1} + T_{6t-2} + T_{6t-3} + T_{6t-4} + T_{6t-5} + m_6 ECT_{t-1} + e_t \dots \dots \dots (7)$$

Equations 2 to 7 exemplify the application of the VECM within this study's model. In this context, the Error Correction Term (ECT) represents the mechanism for correcting errors, while 'et' signifies the error term that illuminates deviations from the long-run equilibrium portion (Engle & Granger, 1987). Consequently, the null hypothesis posits that the independent variables lack a significant long-term relationship with unemployment. The rejection of this null hypothesis occurs when the T-statistic exceeds the T-critical value.

Granger Causality Test

The Granger causality test is conducted to ascertain both the existence and direction of potential causality between two variables simultaneously (Granger, 1969). For instance, when testing causality between two variables, X and Y, the null hypothesis—asserting that variable X does not Granger-cause variable Y—is rejected if the P-value surpasses 0.05. If the null hypothesis is rejected, the causality test results in three potential outcomes:

- i. Variable X affects variable Y
- ii. Variable Y affects variable X
- iii. Variables X and Y affect each other

Statements (i) and (ii) show a unidirectional from one variable to another. Meanwhile, statement (iii) reveals a bidirectional among the variables.

RESULTS

Descriptive Data Analysis

The skewness of unemployment (-0.2106), inflation (-0.1435), and interest rates (-1.7612) is negative, whereas GDP growth (0.7421), foreign direct investment (0.6190), and exchange rates (0.0260) exhibit positive skewness. Top of Form

The kurtosis for unemployment (2.6238), foreign direct investment (2.6430), inflation (1.6647) and exchange rate (1.2552) are less than 3, representing that these variables are platykurtic relative to the normal distribution. Meanwhile, GDP growth (8.2266) and interest rate (7.4767) are leptokurtic relative to normal distribution because their kurtosis is greater than 3.

Unit Root Test Result

All variables except GDP growth (-3.1851) and interest rate (-4.6409) were non-stationary in the level form. This condition means that the unit root problem exists in these variables. Meanwhile, all the variables were stationary at first difference (unemployment, -5.3178; GDP growth, -5.2898; foreign direct investment, -6.7891; inflation, -6.0768; exchange rate, -5.3201). Hence, it is still highly probable that the model may cointegrate, which was examined by the cointegration test.

Cointegration Test

This study implements the cointegration test through the Johansen cointegration test. As the variables are stationary at first difference form, I (1), it will proceed with setting the suitable lag length of the model. Through the VAR model estimation, the value of the Akaike information criterion (-13.0308) was smaller than the value of the Schwarz criterion (-8.118). Hence, the adequate lag length was lag one.

After the suitable lag length was chosen, the unrestricted cointegration rank tests, comprising both trace and maximum eigenvalue tests, indicated that the model exhibits cointegration. This finding was supported by the presence of at least one cointegrating equation at a significance level of 0.05, indicating the existence of a long-term relationship within the model.

Vector Error Correction Model

The VECM (Vector Error Correction Model) approach was employed in this study to illustrate the association between the independent variables—comprising GDP growth, foreign direct investment, inflation, interest rate, and exchange rate—and the dependent variable, unemployment, both in the short run and the long run. As a result, Table 8 presents the outcomes of the VECM in the short run, while Table 9 illustrates the results of the VECM in the long run.

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In the short-term findings, it was observed that GDP growth exhibits a noteworthy negative association with unemployment over the long run. Specifically, a 1% increase in GDP growth tends to correspond with an average decrease of 0.5202% in unemployment. On the other hand, there is an average increase of 0.045% in unemployment when foreign direct investment rises by 1%. This demonstrated

negative relationship is deemed significant, as indicated by the T-statistic (-5.4046) being lower than the critical T-value (-2.021) at a 5% confidence level.

Moreover, inflation, interest rate, and exchange rate also display negative impacts on unemployment in the long run. However, these negative relationships lack statistical significance. Consequently, the extended-run model equation derived from the Vector Error Correction Model (VECM) was presented below:

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$$UE_{t-1} = 12.9210 + 0.5202GDP_{t-1} - 4.4962Log(FDI)_{t-1} + 5.2315Log(INF)_{t-1} + 0.1224IR_{t-1} + 1.9783Log(ER)_{t-1} \dots \dots \dots (8)$$

It was evident that GDP growth exerts a positive impact on unemployment, leading to an average increase of 0.0121% in unemployment for every 1% rise in GDP growth. This positive correlation holds significance, considering the T-statistic (2.3760) being lower than the critical T-value (-2.021). However, during the short run, foreign direct investment and exchange rate demonstrate an insignificant positive relationship with unemployment. Specifically, a 1% increase in foreign direct investment results in an average increase of 0.0002% in unemployment. In contrast, a 1% rise in the exchange rate does not significantly impact unemployment.

Moreover, both inflation and interest rates exhibit a negative relationship with unemployment in the short run. The negative correlation with inflation is statistically significant, showing an average decrease of 0.0272% in unemployment for every 1% increase in inflation. On the other hand, the negative relationship between interest rates and unemployment lacks statistical significance. Additionally, an increase of 1% in interest rates leads to an average reduction of 0.0097% in unemployment.

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Diagnostic Test Result

The diagnostic tests, including the normality test, autocorrelation test and heteroscedasticity test, were carried out. The normality test was done by the Jarque-Bera test. Meanwhile, the autocorrelation test was supported by the correlation LM test, while the heteroskedasticity test was implemented through the White test.

The P-value of Jarque-Bera (0.9678) exceeds 0.05, indicating that the null hypothesis, which states that the model is not normally distributed, is rejected. The

result of the autocorrelation test showed the P-value (0.3740) cannot reject the null hypothesis and proved the model was clear from the autocorrelation problem. The result of heteroskedasticity test revealed that the P-value (0.6312) was more than 0.05, the null hypothesis was not rejected based on the rule of thumb. Therefore, there was no existence of heteroskedasticity problem in the model.

Granger Causality Test

Table 1 illustrates that the result of pairwise Granger causality tests with lags on 1. When the P-value is less than 0.05, the null hypothesis that a variable does not Granger cause another variable will be rejected.

Table 1 shows the Granger Causality Tests Result

Null hypothesis	Obs	F-statistic	Prob.
GDP ----- UE	40	11.4244	0.0017
UE ----- GDP		0.0106	0.9184
LogFDI ----- UE	40	11.3656	0.0018
UE ----- LogFDI		2.0865	0.1570
LogINF ----- UE	40	10.4206	0.0026
UE ----- LogINF		0.9309	0.3409
IR ----- UE	40	11.8527	0.0014
UE ----- IR		0.5600	0.4590
LogER ----- UE	40	16.7448	0.0002
UE ----- LogER		5.3165	0.0268

As the P-value exceeds 0.05, the null hypothesis was rejected, which indicated causality from the selected independent variables, which include GDP growth, foreign direct investment, inflation, interest rate and exchange rate to the dependent variable. Hence, the result proves this model has a unidirectional causality relationship.

CONCLUSION

In essence, this study endeavours to pinpoint the factors influencing unemployment in Malaysia. Additionally, it delves into scrutinizing the connection between these factors and unemployment across both short and long-term periods. The study employed quarterly time series data spanning from the first quarter of 2010 to the first quarter of 2020, utilizing the Vector Error Correction Model (VECM) as the analytical approach.

The findings underscore a significant positive short-term association between GDP growth and unemployment. Furthermore, inflation exhibits a negative impact on unemployment in the short term. In the long run, GDP growth displays an influential reverse correlation with unemployment. Conversely, a noteworthy positive link exists between foreign direct investment and unemployment over the long term, and this positive relationship holds significance. The causality test reveals a one-way causal connection from the selected determinants to unemployment, indicating no causality relationship from unemployment to these determinants.

Given the current challenge of heightened unemployment in Malaysia due to the COVID-19 pandemic, effective government interventions become imperative. One potential strategy involves implementing

expansionary fiscal policies aimed at augmenting government expenditure and reducing income and corporate taxes. These measures can stimulate GDP growth, ultimately curbing unemployment in the long run. Additionally, the central bank could consider deploying expansionary monetary policies, which entail increasing the money supply and reducing interest rates. Maintaining interest rates below 2%, particularly the Overnight Policy Rate (OPR), could facilitate increased borrowing for small and medium enterprises (SMEs), vital for sustaining business operations during this period. The findings emphasize that higher interest rates contribute to increased long-term unemployment, thus highlighting the importance of keeping interest rates low to mitigate unemployment.

Moreover, while external economics plays a pivotal role in Malaysia's national income generation, it can adversely affect long-term unemployment. As a policy maker, the government could implement protective measures to shield domestic enterprises from closure due to foreign competition. Policies such as tariffs could be instrumental in offsetting the impact of foreign direct investment on unemployment in Malaysia by preventing domestic firm closures, thereby maintaining labor demand.

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The recommendation for future research is Covid-19 can be used as a dummy variable to become one of the independent variables in the model. Hence, this model can estimate the impact of the Covid-19 pandemic towards unemployment in Malaysia. Besides that, other variables can be used to identify their impact on unemployment in Malaysia. For example, government debt, government expenditure, corporate tax, population, and political stability are dummy variables and others. Monthly data and the annual times series data can also be adopted to study the impact of the determinants of unemployment. Moreover, other approaches, such as the Autoregressive

Distributed Lag (ARDL) and the Fully Modified Ordinary Least Square (FMOLS), can be applied to catch up the long-run relationship from the independent variables to unemployment.

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PERCEPTIONS OF MALAYSIAN CONSUMERS REGARDING THE RE-IMPLEMENTATION OF GOODS AND SERVICE TAX (GST) AND ITS IMPACT ON SPENDING BEHAVIOR

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ABSTRACT

This study examined the mediating effect of consumers' awareness and perception on re-implementation of the GST on consumer spending behaviour in Malaysia. The study involved 537 respondents in the online survey. Findings reveal that GST rate and tax system's complexity positively influence consumers' awareness and perception towards the re-implementation of GST. Additionally, demographic factors, consumer awareness and perception significantly impact on consumer spending behaviour. Interestingly, consumer awareness mediating the relationship between tax rate and consumer spending behaviour, but not consumer perception. Thus, this provides insights to various stakeholders such as scholars, consumers, industry players and Malaysian Government.

INTRODUCTION

Malaysia had implemented the Sales Tax and Service Tax (SST) for more than half a century since 1970s. On 1 April 2015, Malaysian Government has replaced SST with Good and Service Tax (GST). Since then, Malaysian Government revenue has increased from RM12.4 billion to RM263.3 billion with additional of approximately RM50 billion. This clearly shows that the government has more tax revenue through the implementation of GST (Cheah, 2020). However, the implementation of GST could directly cause a spike in inflation

where the consumer goods and services price will increase in short-term as well as in long-term. Eventually, this makes public suffer over the rise of living costs. After then, Malaysian Government has decided to abolish the GST by keeping GST rate to zero percent and re-introduced SST in September 2018 which reduce the national revenue.

In November 2020, the Ministry of Finance (MoF) has set up a committee to study various revenue-enhancing measures, including the possibility of reintroducing GST (Adreena, 2020). Based on the study, it highlighted that the total collection for GST from 2015-2018 was RM133.1 billion which approximately RM44 billion per year, while SST collection was just RM21 billion per year. This is also partly due to the number of companies (597,000 companies) registered under GST greater than SST (46,519 companies). Whereas the types of taxable products under GST is two times more than SST (6,000 types of products). Hence, the country faced a revenue shortfall when the GST was abolished and replaced with the sales and service tax (SST) (Abolishment of GST affected country's revenue, 2020). The situation became worse, and its fiscal deficit increased substantially during the Covid-19 pandemic, so further debt is required (Cheah, 2020). Malaysia's debt is expected to increase further to 61% of Gross Domestic Product (GDP) in 2021. During COVID-19 pandemic, Malaysian Government also taken a series of initiatives to support Small and Medium Size Enterprise and citizens and Malaysian citizens (Soh, 2020). Thus, declining of national income will impose further challenges to Malaysian Government as higher government expenditure is required to support the economic recovery from COVID-19.

Both SST are single stage tax, whereas GST is a multistage tax. The reimplementation of GST is just to replace the existing SST. GST is not an additional tax to consumers but it will be imposed on more consumer products. Government needs to consider the GST rates and the consumer products that are subject

to GST. It should increase the government's tax revenue but at the same time not be too burdensome on the consumers especially those lower income groups. The researchers (Sanusi, Omar & Sanusi, 2015) highlighted that GST not only increases the tax revenue, it also is a mechanism to reduce the tax collection leakage that happens every year. Hence, the government will have enough resources for social, economic and country's development programs. Other studies have indicated that the public are normally not aware how the government spends the tax revenue. They also have lack knowledge and awareness on the different types of tax imposed in Malaysia (Asma & Zulkarnain, 2014). Hence, it is not surprising that the public may not be aware of the re-implementation of GST. It may subsequently influence the spending behaviour among consumers.

It is important to increase tax revenue as it would help to reduce the fiscal deficit. The re-implementation of GST can increase tax revenue, so the government should study this proposal from an economic perspective. The government should consider the consumers' awareness and their perception about the GST as well as consumers have to pay GST when they purchase those taxable products. The reimplementation of GST is expected to increase the price of the goods and services. In addition, with more consumer products subject to GST, it will be a burden to them. This may affect their spending behaviour especially those lower income consumers. To date, much of the current work have examined the perception of tax compliance behaviour (Alm, 2018; Kiconco et al., 2019; Sadress et al., 2019; Taing & Chang, 2020), where empirically affirmed that three salient construct of Theory of Planned Behaviour (Taing & Chang, 2020), two salient constructs of Theory of Reasoned Action (Kiconco et al., 2019), intention to lie (LaMothe & Bibek, 2020), tax enforcement (Bruno, 2018), tax fairness, isomorphic forces, strategic responses (Musimenta et al., 2017, Sadress et al., 2019), adoption of electronic tax system (Sadress et al., 2019), tax moral, tax

service quality (Alshira et al., 2020), tax justice and trust (Guzel et al., 2019) are significantly related to perception of tax compliance. Notwithstanding of this abundant research antecedents, there is limited studies tested the mediating effect of awareness and perception on the GST rates and complexity of the tax system and consumer spending behaviour. Apart from this, most studies generally argued and affirmed the antecedents of tax compliance. However, the empirical research on tax complexity on consumer spending behaviour is also scarce.

Thus, the purpose of study is threefold as stated below:

- 1) To examine the direct effect of GST rates and tax system's complexity on consumers' awareness as well as perception about GST.
- 2) To examine the direct effect of demographic variables, consumer awareness as well as perception on the GST on consumers' spending behaviour.
- 3) To examine the mediating effect of consumer awareness as well as perception on GST on the relationship between tax system's complexity and consumer spending behaviour.

LITERATURE REVIEW

GST tax system complexity

Several previous studies have shown that the GST rates and its system's complexity played an important role in influencing consumer spending behaviour. According to Palil and Ibrahim (2011), the introduction of GST in a country encouraged producers to simply increase the prices of goods and services that in turn lead to inflation problem. The rising prices would burden the people and eventually change their spending behaviour particularly those from the lower income groups. Similarly,

Alappatt and Shaikh (2014) and Urif, (2016) opined that the implementation of GST could cause low- and middle- income groups to suffer from increased prices of products such as food, healthcare and transportation. As a result, people are forced to alter their spending habits due to reduced purchasing power and increased costs of living. Most of the consumers would cut their consumption on goods and services as prices often inflate significantly after GST implementation (Ishak et al, 2015; Zabri et al, 2016).

A study by Durai and Gayathri (2018) supported the notion that the imposition of a relatively high GST rate on the people would deter households from spending. This is because GST increases the products' prices in the economy that in turn influences people's consumption pattern. Moreover, the relationship between tax complexity and individuals' spending behaviour was highlighted by Facchini (2018). The tax system's complexity is said to have a great influence on people's spending behaviour towards public outputs. As complex tax system increases the costs of acquiring budgetary information, people tend to underestimate the prices of public goods. This would lead to a greater consumption on public products as compared to other goods and services.

In Mehta and Kaur (2018), respondents stated that they did not support GST and disagreed with its implementation, simply because beside the increased cost of living, increased services and products cost on individuals, there were also the multiple rate structure, confusion over the GST concept, increased legal compliances and tax burden on small businesses. On the other hand, respondents who supported the GST mainly opined on more transparency, less corruption, and reduction on tax evasion. In addition, the respondents believed that the spending behaviour could be affected.

Consumer perception on the re-implementation of GST

In Ramkumar (2018), the respondents in Chennai city, advanced their opinion on the various aspects of GST in India. Generally, the respondents were aware of the four tier GST rates and the dual model of GST in the form of CGST and SGST. The respondents maintained a neutral opinion on the GST working mechanism. Nonetheless, they expressed their dissatisfaction on the rates applicable for different products and related problems. Additionally, the respondents disagreed that GST has resulted in increased individuals' personal income and reduced unemployment in the country. Importantly, the respondents stated that they did not experience any increase in their disposable income and the fall in inflation level.

In Ramkumar and Chitra (2020), on the role of GST and its implementation, the respondents perceived that price of product was the major factor influencing their purchasing decision. Followed with their social behaviour and payment mode been modified. In addition, they perceived their spending ability was affected with the increased cost of living resulted in limiting their spending ability. 36% of the 50 respondents in a study by Vincent and Priya (2020) perceived that as consumers, the GST is very difficult to understand and it has increased their tax burden, and 48% of them disagreed on GST would encourages saving on their income. With the mixed perception provided by the respondents in the above studies, we hypothesized as follow:

(H₁): Complexity of the tax system influence consumers' perception about the GST.

Consumer awareness and perception about the GST

In the 256 respondents in civil services, 82.8% of them knew about GST through newspaper (56.6%), television or radio (53.3%), internet

(34.4%), friends (31.6%), teachers or lecturers (7.1%), seminar (5.7%) and other sources (5.2%). With all these knowledge sources, the findings showed that the level of awareness of GST for both male and female respondents were moderate (Mohamad Ali et al, 2016). Zabri et al (2016) also found from the analysis on their 300 respondents, the moderate level of GST understanding. On the perception towards the impact of GST, regardless of gender, marital status and age of the respondents, the results demonstrated a high negative perception about GST (Harjinder Kaur (2018); Mohamad Ali et al). Whereas in Kumar and Sarkar (2016), 75.80% of the respondents aware of VAT being levied on all kinds of product. Also, 80.30% were aware that they have to pay tax on all their purchased products. A study conducted in New York City taxi market by Kenchington et al. (2022) reveals that when the tax on cigarettes increases, the smoker taxi driver be more frequently to cheat their customer to obtain more taxi fare. They performed such a way because they are aware that tax imposed on the cigarettes ending up, they have to pay more to obtain the said product. Thus the following hypothesis is proposed.

(H₂): Complexity of the tax system influence consumers' awareness about the GST.

Consumer spending behaviour

Zabri et al (2016) investigated 300 respondents on the changes in consumers' spending behaviour after the implementation of GST; the result shown that there was a medium level of understanding towards GST. It further shown that with an aggregate mean score of 3.71, the respondents agreed on their reduced spending after the implementation of GST. Moreover, there was no significant relationship between the levels of understanding of GST and spending behaviour among consumers, this was due to the value of correlation coefficient was +0.03 which indicated a very weak positive and not significant relationship between level of understanding and spending

behaviour. However, the significant point found was where the respondents agreed on their reduced spending. This significant behavioural change confirmed the study of Palil and Ibrahim (2012) where households' potential consumptions behaviour changed significantly due to the implementation of GST. In Durai and Gayathri (2018), the opinion found was a mixed positive and negative one where the increased prices on services and products affected consumer's spending behaviour. However, there was no level of significance and no association between income level and spending behaviour. Considering the above, we hypothesized the followings:

- (H₃): Consumers' perception about the GST influence consumers' spending behaviour.
- (H₄): Consumer awareness influence consumers' spending behaviour.
- (H₈): Perception about the GST mediate the relationship between the tax system complexity and consumer spending behaviour
- (H₉): Consumer awareness mediate the relationship between tax system complexity and consumer spending behaviour.

Income Level

Past studies have found a significant linkage between income level and consumer buying behaviour. A study by Gadhave, Daingade and Jamadar (2015) on consumers in the rural markets revealed that households with lower income preferred long lasting, cheap and easy to use goods. Disegna and Osti (2016) also confirmed that consumer expenditure was affected by their income level. According to the economic theory of consumer behaviour, rational consumers would tend to choose goods and services that can maximize their level of utility or satisfaction with a given level of income. Consumers are assumed to rank the goods and services and choose combinations of products that would lead to maximum

satisfaction. Bunn, Reinold, and Surico (2018) investigated the impact of income changes (both positive and negative adjustments) on consumer spending behaviour. The results indicate that adverse income shocks have significant influence on spending responses than positive income shocks. The finding further produced significant implications for people responses to fiscal policy including tax measures taken by the government. Ramkumar and Chitra (2020) concluded in their study that indirect tax is positively related to consumers' disposable income. However, there are some limited studies which discovered that income and individual spending behaviour are unrelated; there was no significant relationship between consumer income and their buying behaviour (Durai & Gayathri, 2018). As such, the following hypothesis is formulated:

- (H₅): Income level influence consumers' spending behaviour.

Educational Level

The study from Harjinder Kaur (2018) stated that 36% respondents with post graduate degree demonstrated that education being a demographic variable has a significant relationship on the level of awareness and knowledge about GST. Although the overall result further indicated the level of awareness of the GST is below a satisfactory level. Whereas in Ramkumar and Chitra (2020), with as high as 70% of the respondents being undergraduate with reasonable earnings, the respondents felt that their cost of living increased due to GST and that has limited their spending ability. Therefore, the following hypothesis is formulated:

- (H₆): Education level influence consumers' spending behaviour.

Individual's Occupation

An individual's occupation is an important determinant for consumer spending behaviour. In Borwein (2020), it is discovered that

occupational background and consumption pattern are closely related among the Canadian cabinet ministers. Likewise, Fourie, Slabbert and Saayman (2018) reveal that average spenders and big spenders have different spending pattern when it comes to the choice of tourist destinations. Specifically, big spenders are mostly professionals who can afford to pay for iconic natural attractions in which they spend much more than the average spenders. Other studies which have demonstrated a meaningful linkage between occupation and consumer spending behaviour include Salgado-Barandela, Barajas, and Sánchez-Fernández (2018) and Mortazavi (2021). However, in Durai and Gayathri (2018), out of the 121 respondents, 54.5% were private sector employees, 22.3% came from public sector and self-employed persons were 23.1%, nevertheless, after the implantation of GST, it was found that 53.7% of the mobile phones consumption of the respondents remained the same, and the consumption of hotel service has decreased by 43.8%. Even then, going to restaurants has increased by 57.9%. The result indicated no level of significance association of income level from respondents' occupation on their spending behaviour. In 2019, Parker and Wenyu's study confirmed no significant association between consumers' occupation and their shopping behaviour on fashion apparel in China. It is hypothesized that:

(H₇): Occupation influence consumers' spending behaviour.

METHODOLOGY

Procedure and Sample

The main reason for this study is to understand consumer spending behaviour and examine its perceptions and awareness of consumers toward re-implementation of GST in Malaysia. The target population is citizen of Malaysia who are 18 years and above with income, thereby the size of the population is greater

than 1 million. Based on the Krejcie and Morgan (1970)'s minimum sample size listed in the table, the acceptable minimum sample size for the targeted population with 95% confidence level and a 5% error of margin is 384 respondents. A convenient sampling technique was used to identify respondents who are eligible to take part in the online survey. Prior to data collection, an ethical approval was obtained from Institution Scientific and Ethical Review Committee. An online survey link was distributed to eligible respondents in August 2021 via various platform such as email, WeChat, and WhatsApp. In order to increase the participation rate, a RM 10 was offered to each respondent who responded to the survey as a token of appreciation.

A total of 537 respondents were responded to the online survey link. As sample size of 537 exceeds the required minimum sample size, it can therefore be concluded that the study has sufficient power to identify the required effect size of 0.15. Out of 537 respondents, 317 respondents are female (59%), and 220 respondents are male (41%). Table 1 provides a detail of the respondent's characteristics.

Table 1 shows the respondents' characteristics

Characteristics	Full Sample (N = 537)	
	Frequency	Percentage
<u>Gender</u>		
Male	220	41%
Female	317	59%
<u>Ethnic Group</u>		
Malay	345	64%
Chinese	120	22%
Indian	72	13%
<u>Age Group</u>		
18 - 27 Years Old	196	36%
28 - 37 Years Old	208	39%
38 - 47 Years Old	76	14%

48 - 57 Years Old	39	7%
More than 58 Years Old	18	3%

Gross Personal Income

Below RM2,000	153	28%
RM2,000-RM3,999	161	30%
RM4,000-RM5,999	107	20%
RM6,000-RM7,999	58	11%
RM8,000-RM9,999	30	6%
RM10,000 and Above	28	5%

Highest Qualifications

Primary Education	20	4%
Secondary Education	74	14%
Tertiary Education	215	40%
Postgraduate Education	228	42%

Sector

Public Sector	178	33%
Private Sector	359	67%

Occupation

Administrative	90	17%
Engineering/Technical	67	12%
Managerial/Executive	97	18%
Professional	186	35%
Self-employed	80	15%
Retired	17	3%

Measurement Instruments

As the tax system is unique to the tax context, a list of items was adapted which have been validated by prior research. These items were modified to suit the context of the study. A five-point Likert scale was used to measure these items ranging from one for strongly disagree to five for strongly agree. Prior to data collection, the developed questionnaire was pilot tested by a group of 20 respondents and pre-tested by two professionals. All constructs were higher-order construct: complexity of the GST, perception, awareness, and consumer spending behaviour. Whereas education, income level, and occupation are single-item measure.

Complexity. An eight-item scale measurement was adapted from Mehta and Kaur (2018) and Gowtham Ramkumar (2020). These items were used to understand the view of Malaysian citizens on the complexity of the GST system implemented in Malaysia. Sample items includes "GST is a simpler tax system compared to Sales Tax and Service Tax (SST)" and "I find it difficult to understand the GST system". The inter-item consistency score for complexity was 0.890, which was regarded as good.

Perception. Perception construct was measured with eight items developed by Vincent and Lakshmi Priya (2020) and Ramkumar (2018) which to assess how respondents perceived the re-implementation of GST in the near the future. The sample items include "GST will increase tax collection for the country" and "GST will increase the tax burden on citizens". Cronbach's alpha for perception construct's measurement in this study was 0.825. This shows that the eight-item scale measurement was reliable.

Awareness. The four-item scale constructed by Kumar and Sarkar (2016) was adapted to measure awareness construct in this study. These items were used to understand the awareness of consumer on the re-implementation of GST. Items includes "I am aware that I have to pay for GST on most products in the future" and "I am aware that manufacturers and dealers have to pay for GST and they will subsequently levy the same tax on consumers". The Cronbach's alpha for awareness construct's measurement was 0.838, which was regarded as good.

Consumer Purchasing Behaviour. This construct was assessed by seven-item scale developed by Durai and Gayathri (2018) and Gowtham Ramkumar (2020) which used to examine how the re-implementation of GST influence consumer spending behaviour. Sample items includes "GST will discourage me from dining in restaurants"

and “I plan to purchase only essential items when GST is re-implemented”. Cronbach’s alpha for consumer purchasing behaviour measurement in this study was 0.927, thereby concluded as good reliability and able to produce a consistent measure.

FINDINGS

This study utilized two software tools: Statistical Package for the Social Sciences (SPSS) version 25 and Smart PLS version 3 to conduct a range of analyses. Specifically, SPSS was employed for preliminary and descriptive analyses, while Smart PLS was utilized to evaluate both the measurement and structural models. The choice of Partial Least Square Structural Equation Modeling (PLS-SEM) was deliberate, as it can effectively manage single-item constructs without identification issues (Hair, Hult, Ringle, Sarstedt, Danks & Rays, 2021). Moreover, PLS-SEM is proficient in maximizing the unexplained variance in the dependent measures, also recognized as explanatory power (R² values) (Hair et al., 2021).

Preliminary Analysis

As this study adopted a single method in data collection, a common method bias could be arisen which refers as a type of bias specifically in the estimation of constructs’ relationship (Podsakoff & Organ, 1986). Both procedural and statistical remedies can be applied to address this bias issue (MacKenzie & Podsakoff, 2012). For procedural remedy, it can be done through ensuring the questionnaire is well designed, pre-tested and pilot tested before data collection. Whereas for statistical remedy, the Harman’s Single Factor test was pursued using unrotated factor analysis. Based on the analysis, its show that the first factor (31.26%) accounted less than 50 percent of the variance. Thereby, common method bias is not a serious threat in this study.

Descriptive Analysis

Table 2 shows the Mean, Standard Deviation and Inter-Correlations

No. Construct	1	2	3	4	5	6	7
1 Income Level							
2 Education Level	.16**						
3 Occupation	-.24**	-.14**					
4 Complexity	.05	.06	.08				
5 Perception	.11**	.11*	.05	.59**			
6 Awareness	.09*	.07	.06	.63**	.68**		
7 Consumer Spending Behaviour	.02	-.04	.13**	.08	.21**	.34**	
Mean	N/A	N/A	N/A	3.27	3.65	3.47	3.45
Standard Deviation	N/A	N/A	N/A	.77	.85	.67	.93

Measurement Model Analysis

A Partial Least Squares (PLS) algorithm was employed to evaluate and validate the construct model’s validity and reliability (Hair, Hult, Ringle, Sarstedt, Danks & Ray, 2021). Examination of Table 3 revealed that factor loadings for all items exceeded the prescribed minimum threshold of 0.708, except for one item within the consumer spending behavior and four items within the perception construct (Hair, Risher, Sarstedt & Ringle, 2019). Furthermore, the average variance extracted scores for the constructs surpassed the stipulated minimum cut off value of 0.500 (Hair et al., 2019). Assessing composite reliability indicated that the score for each construct surpassed the recommended value of 0.708 (Hair et al., 2021). Consequently, this confirmation validates the model’s convergent validity and reliability.

Whereas for discriminant validity, the Heterotrait-Monotrait (HTMT) criterion test was performed to make certain that the construct is distinct from each other. Hair, Ringle, and Sarstedt (2013) indicated that discriminant validity can be achieved if the HTMT score is below than the usual rule of thumb - $HTMT_{0.85}$ or more conservative rule of thumb - $HTMT_{0.90}$. Table 4 reveals that none of the HTMT score is greater than both rule of thumbs recommended by Henseler, Ringle and Sarstedt (2015), thereby discriminant validity is well confirmed.

Table 3 shows the Result of Convergent Validity

Constructs	Items	Loadings	AVE	CR	CA
Income Level	Single-Item				
Education Level	Single-Item				
Occupation	Single-Item				
Complexity	CQ2	0.750	0.603	0.913	0.890
	CQ3	0.632			
	CQ4	0.839			
	CQ5	0.851			
	CQ6	0.821			
	CQ7	0.838			
	CQ8	0.675			
Perception	PQ1	0.665	0.663	0.886	0.825
	PQ2	0.849			
	PQ3	0.892			
	PQ4	0.834			
Awareness	AQ1	0.782	0.673	0.891	0.838
	AQ2	0.854			
	AQ3	0.861			
	AQ4	0.780			
Consumer Behaviour	Spending				0.927
	CSBQ1	0.756	0.700	0.942	
	CSBQ2	0.788			
	CSBQ3	0.879			
	CSBQ4	0.907			
	CSBQ5	0.902			
	CSBQ6	0.891			
	CSBQ7	0.710			

Note. AVE=Average Variance Extracted; CR=Composite Reliability; CA=Cronbach Alpha

Table 4 shows the Heterotrait-Monotrait Criterion

No.	Construct	1	2	3	4	5	6	7
1	Income Level							
2	Education	0.162						
3	Occupation	-0.240	-0.040					
4	Complexity	0.062	0.073	0.081				
5	Perception	0.155	0.115	0.091	0.364			
6	Awareness	0.125	0.118	0.050	0.689	0.685		
7	Consumer Spending Behaviour	0.016	-0.040	0.134	0.047	0.595	0.245	

Structural Model Analysis

To evaluate structural model, the bootstrapping technique with 5000 resamples was applied to test the model and proposed hypotheses. The explanatory power for endogenous constructs: perception ($R^2=0.109$), and consumer

spending behaviour ($R^2=0.306$) are considered moderate as exceeded the moderate threshold value of 0.26, whereas awareness ($R^2=0.377$) explanatory power exceeded 0.35 which is considered large (Cohen, 1988). Table 5 demonstrates that complexity is significantly related to perception ($\beta=0.331$,

$t=5.001, p<0.001$) and awareness ($\beta=0.614, t=13.864, p<0.001$), thereby supporting hypothesis 1 and 2. Similarly, both perception ($\beta=0.599, t=11.394, p<0.001$) and awareness ($\beta=-0.108, t=2.010, p<0.05$) are also significantly related to consumer spending behaviour. Thus, hypotheses 3 and 4 are well supported by the data. Apart from this, all the demographical variables: income level ($\beta=-0.070, t=1.795, p<0.05$), education ($\beta=-0.070, t=1.926, p<0.05$) and occupation ($\beta=0.067, t=1.719, p<0.05$) are also significantly related to consumer spending behaviour.

Table 5 shows the Direct Path Results

H	Path	Beta	Standard Error	t-Statistics	Results	Bootstrapping Confidence Interval	
						5% LL	95% UL
H1	Complexity > Perception	0.331	0.066	5.001**	Supported	0.213	0.434
H2	Complexity > Awareness	0.614	0.044	13.864**	Supported	0.545	0.690
H3	Perception > CSB	0.599	0.053	11.394**	Supported	0.510	0.689
H4	Awareness > CSB	-0.108	0.054	2.010*	Supported	-0.188	-0.014
H5	Income Level > CSB	-0.070	0.039	1.795*	Supported	-0.098	-0.012
H6	Education Level > CSB	-0.070	0.036	1.926*	Supported	-0.126	-0.006
H7	Occupation > CSB	0.067	0.039	1.719*	Supported	0.005	0.134

Note. **=significance at 0.001; *=significance at 0.05; LL=Lower Level; UL=Upper Level; CSB=Consumer Spending Behaviour

Table 6 shows the mediation analysis result. The statistical result shows that only awareness is significantly mediate the relationship between complexity and consumer purchasing behaviour ($\beta=0.182, t=4.576, p<0.001$), whereas perception is not. Thereby, the hypotheses 8 is not supported by data and hypothesis 9 is well supported by the data. Further to this, complexity is not significantly related to consumer purchasing behaviour. Since the direct effect is not significant and indirect effect of awareness on the same direct path is significant, this implicit as a full mediation for hypothesis 9 (Zhao, Lynch & Chen, 2010).

Table 6 shows the Indirect Path Results

H	Path	Beta	Standard Error	t-Statistics	Results	Bootstrapping Confidence Interval	
						5% LL	95% UL
H8	Complexity > Perception > CSB	0.101	0.077	1.318	Not Supported	-0.114	0.194
H9	Complexity > Awareness > CSB	0.182	0.040	4.576**	Supported	0.111	0.263

Note. **=significance at 0.001; *=significance at 0.05; LL=Lower Level; UL=Upper Level; CSB=Consumer Spending Behaviour

DISCUSSIONS

This study aims to examine the impact of GST rate and its complexity on consumer awareness and consumer perception towards re-implementation of GST. Subsequently, the association between consumer awareness as well as consumer perception and consumer

spending behaviour is investigated. We also study the mediating effect of both consumer awareness and consumer perception on the linkage between GST rate and its complexity and consumer spending behaviour. Our findings indicate that most Malaysians find GST rate and complexity of the tax system as a major determinant for their awareness and

perception towards the re-implementation of GST. Even though majority of the Malaysians recognized the efficiency of GST, they find the GST system complex and difficult to be understood. As the general public assumes GST to be a cumbersome system, thus government's efforts in changing people's viewpoints on the GST system is essential. Our results are consistent with the findings of Jamal, Mustapha, Khairi, and Alwi (2018), Saad (2014) and Tambi, Ibrahim, Yusof, and Tahir (2018) who suggest that the lack of general and technical knowledge on the complicated GST regime itself causes people to perceive the tax system negatively.

Additionally, our results demonstrate that consumer perception towards GST re-introduction has a strong and significant impact on consumer spending behaviour among Malaysians. The general public perceives that the prices of goods and services would increase with the imposition of GST. Despite most respondents agree to the notion that GST increases government tax revenue, they perceive GST as a tax system that could bring about heavy burdens to the people. If GST is re-implemented in Malaysia, many Malaysians plan to be more prudent in their daily spending by purchasing only essential items. As reported by Sharma and Singhvi (2018) and Zabri, Ahmad, and He (2016), consumer perception is a key factor influencing consumer spending patterns. Moreover, a moderate and significant relationship is discovered between consumer awareness towards GST and consumer spending behaviour. As Malaysians are aware that they will need to pay for GST on most goods and services in the future, their spending behaviour changes. Our result is line with some previous studies such as Ansari, Ansari, Ghor, and Kazi (2019) and Siddique and Hossain (2018) who highlight the importance of awareness in affecting personal consumption behaviour. Interestingly, consumer awareness is found mediating the relationship between tax rate and its complexity and consumer spending behaviour, but not consumer

perception. This has proven that consumer awareness towards GST re-implementation is of paramount importance in explaining how Malaysians spend their money on goods and services. The role of consumer awareness as a crucial mediator is supported by Iram, Bilal, and Latif (2021) and Sulaiman, Mat, and Abd Ghani (2018).

When it comes to demographic factors such as occupation, income level and educational level, these variables are discovered to affect consumer spending behaviour moderately and significantly. As mentioned by Borwein (2020) and Mortazavi (2021), professional backgrounds or occupations do affect an individual's spending behaviour. Moreover, the significance of income level and educational level in impacting consumer spending trends are agreed by Greenacre and Akbar (2019) and Soon (2022), respectively. However, our findings are contradictory to Durai and Gayathri (2018) who deny the role of demographic factors on spending behaviour of salaried individuals.

CONCLUSION

In a nutshell, this study is with the aim of investigating the consumer awareness and perception on the re-implementation of goods and services tax in Malaysia. Additionally, the effects of GST on consumer spending behaviour are also scrutinized. The empirical analysis employing SEM-PLS provides insightful findings to the businesses and policymakers on the re-introduction of GST in Malaysia. Our findings have several important theoretical implications. First, the results reveal that the rate of GST and its complexity have a strong and significant impact on both consumer perception and consumer awareness towards the re-implementation of GST in Malaysia. It is worth highlighting that this strand of research is absent from the literature particularly in the contexts of Malaysia. Second, it is important to note that consumer perception towards GST re-

implementation influences consumer spending behaviour strongly and significantly. However, consumer awareness on GST re-implementation is found to have a moderate effect on consumer spending behaviour. This study proves that consumer perception plays a more vital role in influencing consumer spending behaviour than consumer awareness. Based on the literature review, none of the existing studies on Malaysia have examined the relationship between consumer awareness and consumer perception on GST re-implementation and consumer spending behaviour. Third, this study investigates the mediating role of both consumer awareness and consumer perception on the nexus between tax complexity and consumer spending behaviour. Again, no previous studies have ever looked into this strand of research.

Our study also provides several essential practical implications to the policymakers in facilitating their efforts and intention to re-introduce GST system in the near future. In the meantime, policymakers can also make use of the findings of the study in designing appropriate economic and taxation policies that could contribute to increased consumer spending and robust economic growth. The results of our study can also be utilized by companies in relooking into their existing business strategies. First of all, the fact that the complexity of the GST system affects consumer perception and awareness implies that a simplified GST tax system is required in Malaysia. To ensure the successful re-implementation of GST in Malaysia, the government should design and implement an easy-to-understand and efficient GST tax system. Prior to the re-implementation of GST in Malaysia, it is also essential for the government to organize awareness campaigns throughout the country in order to educate individuals and to improve public awareness towards GST. Various communication channels such as mass media, face-to-face explanation and social media can be utilized to increase Malaysians' readiness for the reimplementation of GST. A better understanding on GST mechanism could

help to create a positive perception towards GST among the people. Most importantly, good compliance on the new GST would eventually lead to increased tax collection by the government. As our findings indicate that Malaysians' awareness and perception do affect consumers' spending behaviour, it is crucial therefore for the government to ensure that consumers' consumption is not dampened by people's misperception and misinterpretation on the new GST regime. It is important to note that a decline in the overall household consumption would lead to a sluggish economic performance in the country. Besides information campaigns, various supporting materials such as GST guidebook, pamphlets and exhibitions need to be provided by the government to furnish explanations on GST. These materials should highlight the benefits of GST to the country and individuals if compared to the existing sales and service tax (SST) system. Moreover, it is shown from the study that people from diverse backgrounds with different occupation, income level and education level have varying buying behaviour. Thus, it is critical for business managers to come out with relevant marketing strategies to cater to the needs of different consumer groups. For example, people from different backgrounds might have different sensitivity levels towards prices of goods and services that could influence their buying attitude and behaviour.

Notes

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EXAMINING THE FACTORS THAT INFLUENCE THE INTENTION TO REGISTER FOR HAJJ AMONG DEPOSITORS IN TABUNG HAJI SABAH

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ABSTRACT

Registration for Hajj in Malaysia through Tabung Haji (TH) is a significant and religiously important process for Malaysian Muslims who wish to perform the Hajj pilgrimage to Saudi Arabia. Hajj pilgrimage is one of fundamental pillars of the Five Pillars of Islam and a compulsory religious duty for Muslims who are physically and financially able to undertake the journey at least once in their lifetime. TH is a government-owned institution that specializes in facilitating the Hajj for Malaysian Muslims by providing comprehensive Hajj packages, support and guidance. Unfortunately however, there are a significant number of TH depositors who are unaware of the need to register for Hajj as evident from the number of depositors who have not registered for Hajj against the number of depositors who are already eligible for Hajj registration. Thus, the aim of this study is to reveal the determinant that influence TH depositors in their intention to register for Hajj in Sabah. The study also notes the relationship between perceived behavioral control, ibadah personality and service quality with the intention to register for Hajj. The study applied a quantitative analysis by distributing survey questionnaires among TH depositors in the state. The findings indicated that all three factors, namely perceived behavioural control, ibadah personality and quality of the service, are the influencing reasons on the intention of TH depositors to register for Hajj in Sabah. This study is significant as it is one of the earlier

studies in Malaysia, particularly in Sabah, that examine the intention to register for Hajj from the perspectives of TH depositors. Therefore, the findings will have the practical use particularly for TH to enhance their strategies in attracting TH depositors to register for Hajj.

INTRODUCTION

Hajj is one of the five foundational pillars of Islam, and is an obligation all Muslims who are physically and financially able to perform the Hajj at least once in his lifetime (Sharifah Ismail & Haslinda Hasan, 2020). In order to perform hajj in Malaysia, a Muslim must first register with Tabung Haji (Tabung Haji, 2019). Tabung Haji (TH) Malaysia is a government-manage institution which was established in 1963 to provide financial assistance to the Muslim and rural communities in Malaysia for the purpose of performing Hajj in Saudi Arabia. Nowadays, the main function of TH is to manage and cater the needs of Muslims in Malaysia to perform *hajj* through the concept of savings and investments in ways that are not contrary to the Islamic principles (Ishak, 2011). Additionally, since 1995, TH has implemented a "First-Come, First-Served" concept for Hajj registration and depositors who has registered for Hajj will be entitled to perform their Hajj in the year in which their registration takes place. Thus, all depositors who have registered for hajj are qualified to perform their hajj when their turn comes (Tabung Haji, 2019).

The TH Group's Managing Director and Chief Executive Officer has declared that the number of depositor accounts owned by the TH Group is 8.8 million. The total number of depositors with no hajj registration is 7.5 million. In addition to the 7.5 million, there are 1.9 million who have made a hajj registration and are waiting for their turn (Ghani et al., 2015). There are also many depositors with sufficient savings (the minimum savings to make a hajj registration is RM 1,300), but do not register for Hajj. According to TH Group's Managing Director and Chief Executive Officer

statement (Ghani et al., 2015), there are still many depositors who have not registered for hajj, as opposed to the number of TH accounts that are eligible to register.

It is expected that the perception of one's ability to control behavior will significantly impact the intention to sign up for the Hajj pilgrimage. Previous research has established "attitude" and "social influence" as reliable factors in understanding an individual's acceptance of Islamic financial products (Taib et al., 2008; Yuserrie et al., 2004). The assumption is that perceived behavioral control is influenced by the complete range of accessible beliefs regarding control. In this study, 'accessible control beliefs' refer to the beliefs about the presence of factors that may make or break one's intention to perform matters related to Religion, such as Hajj. Furthermore, *Ibadah* plays a major and influential role in influencing one's intention to undertake matters related to Religion. As Muslims, it is essential to be productive, gain knowledge, and take action in the direction of Allah SWT. To get closer to Allah, one must have a strong intention to do things, be patient and consistent, and abstain from doing things for Him. Furthermore, improving service quality has a direct effect on the growth of TH depositors' numbers due to TH has the monopoly status that is actually derived from the provision within the Tabung Haji Act (Manan, 1996). Thus, the management of TH should strive to maintain a consistent flow of depositors each year and to maintain a high level of service excellence in order to increase the number of depositors.

Therefore, based on perceived behavioral control, *Ibadah* and service quality that influence the intention to register for hajj, this research investigated the factors that can influence the depositors to intent to register for hajj. This study also offers probable explanation for answering the research questions outlined in the previous section based on the analysis and literature review. From the perspective of academic, although there is a lot of papers or literature addressing about hajj management,

the researcher had never come across any of those journals on behavior as well as the dimension of service quality in terms of the intention to perform hajj. Thus, this study act as one of the earlier studies in Malaysia, particularly in Sabah, that has address about the intention to register for Hajj that can open up more research to be carried out in this area.

LITERATURE REVIEW

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) stands as a prevailing conceptual framework extensively used in the examination of human behavior. The choice to utilize TPB for this study's intention prediction is founded on endorsements from prior researchers like Ajzen (1991) and La Morte (2019). According to Ajzen, TPB forecasts an individual's intention to execute a behavior at a specific time and place. The theory was devised to explicate behaviors that individuals can control. TPB serves as the foundational framework in this research, allowing for an in-depth exploration of the direct influence of attitude, cultural aspects, and personal factors affecting intentional participation in the Hajj registration process. Ajzen's TPB model integrates three key variables: attitude, subjective norms, and perceived behavioral control, all of which directly shape behavioral intentions. In the context of this study, behavioral intention refers to the act of registering for Hajj, serving as the dependent variable. Meanwhile, perceived behavioral control is employed as the independent variable to explore its connection with the intention to register for Hajj. The anticipation is that the perception of behavioral control will significantly impact the registration intention, as it is determined by a comprehensive set of accessible beliefs related to control. Furthermore, other variables in this study were formulated based on respondents' assessments, service quality, and "ibadah" (worship) personality, aiming to investigate factors influencing Hajj registration among depositors in Sabah.

Perceived Behavioral Control and Intention to Register for Hajj.

Perceived Behavioral Control (PBC), drawn from the TPB framework (Ajzen, 2012), serves as an independent variable in this research. Ajzen & Madden (1986) define PBC as an individual's belief concerning the ease or difficulty of performing a particular behavior. TPB posits that attitudes, subjective norms, and PBC collectively influence behavioral intentions. A more positive attitude, along with stronger subjective norms and greater perceived behavioral control, leads to more robust intentions to engage in specific behaviors (Aziz, Afaq & Bashir, 2018). Alam & Sayuti (2011) suggest that PBC is shaped by an individual's beliefs regarding the influence of situational and internal factors on behavior performance. The more control depositors feel regarding Hajj registration, the more likely they are to act upon it. Previous studies have yielded varied results on the relationship between PBC and intention.

Several studies have affirmed a positive relationship between PBC and intention, such as its significant impact on purchase intention in family takaful schemes (Md Husin & Ab Rahman, 2016), the intention to adopt Islamic banking services in Morocco (Echchabi & Aziz, 2012), and the positive inclination towards adopting internet banking (Al-Ajam & Nor, 2013). Conversely, some studies have failed to establish a significant relationship between PBC and intentions, such as those demonstrating a negative influence on the intention to adopt Islamic banking services (Echchabi & Azouzi, 2015) and internet banking adoption (Al-Majali & Nik Mat, 2010). Therefore, the following hypothesis is posited:

- H1: There exists a significant relationship between perceived behavioral control and the intention to register for Hajj.

Ibadah Personality and Intention to Register for Hajj

"Ibadah" (worship) stands as a crucial component in Islamic teachings (Hamjah et al., 2015), while 'Personality' refers to an individual's traits aligned with Islamic spirituality as per the Quran and Sunnah (Othman, 2011). All human actions are considered acts of worship (Ibadah) (Othman, 2011). Thus, this study adopts Ibadah Personality from the Ummatic Personality Inventory (UPI) developed by Othman (2008). This research aims to explore the potential impact of Ibadah personality on the likelihood of Sabah depositors registering for Hajj. Previous research has demonstrated that consumers' religious behavior significantly influences their willingness to purchase halal products (Putri, 2018; Daryanti, 2018; Ningtias, 2014). Hence, this study aims to ascertain if Ibadah personality influences the likelihood of registering for Hajj. Therefore, the following hypothesis is proposed:

H2: There exists a significant relationship between Ibadah personality and the intention to register for Hajj.

Service Quality and Intention to Register for Hajj

Service Quality, as proposed by Parasuraman (1985) and Zeithaml and Bitner (2003), reflects "the difference between expectations and performance of the service." Zeithaml and Bitner (2003) specify Service Quality as a focused evaluation of a customer's perception regarding specific dimensions of service, namely reliability, responsiveness, assurance, empathy, and tangibles. Earlier studies have defined service quality as the extent to which a service meets customers' needs or expectations (Lewis & Mitchell, 1990; Dotchin & Oakland, 1994).

It is worth noting that TH is the sole institution offering Hajj services in Malaysia and is obliged to comply with Fardu Kifayah and Shariah compliance in ensuring service quality for all depositors. Excellent service from TH may positively influence the intention to register for Hajj. Prior studies have

demonstrated positive correlations between service quality dimensions and purchase intentions (Pe´rez et al., 2007). Conversely, dissatisfactory service might lead to customers switching to alternative services (Sunaryo, 2013). Hence, TH must ensure depositor satisfaction with their services, and therefore, the following hypothesis is proposed:

H3: There exists a significant relationship between service quality and the intention to register for Hajj.

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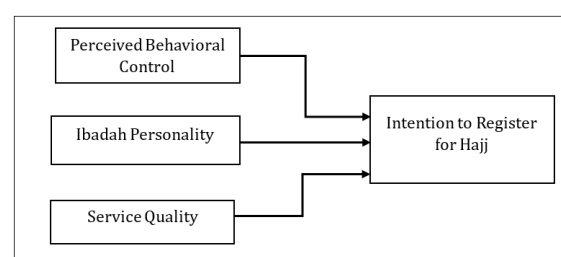


Figure 1 shows the proposed research model

METHODOLOGY

A cross-sectional survey study based on the deductive research approach was conducted using questionnaire through distributed to TH depositors who come as walk-in at the selected TH Branches in Sabah. The selected respondents are from TH depositors who are entitle to register (i.e., Saving above RM1,300 or members of employee Provident Fund) but not have not registered. The questionnaires were distributed to 540 respondents but only 338 returned questionnaires were usable. This study aimed to assess the relationship between factors that can influence depositors in their intention to register for Hajj in Sabah using correlation and regression analysis. The questionnaire consisted of five sections, which comprised of (i) demographic characteristics of respondents, (ii) perceived behavioral control, the individual perspective on (iii) their own Ibadah Personality, (iv) THs' service quality that influences the intention to register. Individual intention to register for Hajj was chosen as the dependent variable to reflect the dichotomous nature of the decision.

Table 1 shows the questionnaire design and measurement

Variable	Items	Source	Measurement
Perceived Behavioral Control	5	Ajzen (2012)	Five-point Likert Scale
Ibadah Personality	30	Othman (2011)	Five-point Likert Scale
Service Quality	22	Hisam, Sanyal & Ahmad (2016).	Five-point Likert Scale
Intention to Register for Hajj	5	Liñán & Chen (2006)	Five-point Likert Scale

Table 1 showed the questionnaire design and measurement used in this study. Both descriptive and inferential statistical analyses were carried out using SPSS 23. Descriptive statistical analysis was used to summarise the results of respondents while inferential statistics were used to test the correlation and relationship. This research ensured that the particulars of respondents were anonymous so that the data collected would be traced back to them.

FINDINGS

Demographic Characteristics of Respondents

A total of 540 questionnaire were distributed to the respondents and a total of 505 of the questionnaires were returned. From the return questionnaire, only 388 were usable and sufficient since it above 300 respondents to test the measurement scale in research study (Malhotra & Peterson, 2002; Nunnally, 1978). The characteristic of respondents plays significant roles in influencing individuals to register for Hajj. Therefore, the key profile designation of respondents was examined in this study which includes, gender, age, education levels, and annual income. The information about the demographic respondents' profile is presented below.

Table 2 shows the demographic profile of companies and respondents

Demographic Variables	Frequency	Percentage
Gender		
Male	186	48
Female	202	52
Age (years)		
20-25	52	13.4
26-30	102	26.5
31-35	121	31.2
36-40	41	10.6
41-45	34	8.8
46-50	37	9.5
Education Level		
UPSR	7	1.8
SRP/PMR/PT3	28	7.2
SPM	137	35.3
Certificate or Diploma	98	25.3
Bachelor Degree	99	25.5
Master's Degree or higher	16	5
Other	3	0.8
Annual Income		
RM18,000 and below	63	16.2
RM18,001 – RM36,000	135	34.8
RM36,001 – RM60,000	122	31.4
RM60,001 – RM90,000	55	14.2
RM90,001-RM120,000	12	3.1
RM120,001 and above	1	0.3

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is frequently employed in the initial phases of research to comprehend the connections among a set of variables (Tabachnick and Fidell, 2013). This analysis indicated that Bartlett's test of Sphericity yielded significant results at $p < 0.000$, suggesting that the dataset does not exhibit an identity matrix with zero correlations, making it suitable for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.975, surpassing the threshold of 0.50, as deemed satisfactory by Hair et al. (2010). Additionally, both the anti-image correlation and commonalities values

exceeded 0.50. Consequently, this process led to the identification of four meaningful factors. These factors have been labelled and defined, providing a description based on the outcomes derived from the factor analysis.

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Validity and Reliability Analysis

The pilot study was done to examine the validity and reliability of items (Oladimeji, 2015). For the pilot study, 30 respondents were chosen to test and avoid the errors of spelling, bug, or ambiguous questions or instructions found in the questionnaire. According to Aniza (2013), the objective of pilot testing is to refine the wording, filter the questions, check on the uniformity, consistency and validity of variables used in the instruments, test the language used, the time taken to answer the questionnaire, and test the research design. The results of the pilot survey will help establish the stability and internal consistency reliability, face and content validity of the questionnaire.

The scale's construct validity was assessed by calculating the Cronbach alpha Coefficient, yielding an acceptable value, signifying strong construct validity (Parasuraman, Zeithaml & Berry, 1998). Additionally, individual factor analyses were conducted for the four constructs to ascertain the proportion of variance explained by each factor. In gauging the internal consistency of the instrument, the Cronbach alpha statistic, advocated by Bajpai and Bajpai (2014), was utilized. Reliability assessments encompassed all items within the scale. Overall, the results demonstrated robust Cronbach Alpha

values ranging from .893 to .977, in line with the benchmarks set by Sekaran & Bougie (2010). These values surpassed the minimum acceptable threshold of 0.60, as suggested by Hair et al. (1998). The outcomes of the validity and reliability analyses are detailed in Table 3.

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Table 3 shows the item reliability and validity analysis

Variable	Number of Items	Cronbach α	% of Variance Explained
Perceived Behavioral Control	5	0.919	55.203
Ibadah Personality	30	0.977	59.949
Service Quality	22	0.977	63.639
Intention to Register for Hajj	5	0.958	66.778

Pearson Correlation Analysis

Pearson correlation analysis refers to the degree of relationship between variables. The Pearson correlation coefficient (r), used to measure of the strength and direction of association that exists between two variables measured on at least an interval scale. According to Coakes et. Al (2009), Pearson moment correlation provides information about the linear relationship between two continuous variables, and the value of this correlation coefficient ranging between -1 and +1, while the sign (+ or -) indicates the direction of the relationship. Thus, the three factors were correlated to intention to register for Hajj to establish a positive relationship and the results are reported in Table 4.

Table 4 shows the correlation output table using SPSS

Variables	1	2	3	4
Perceived Behavioral Control	1.000			
Ibadah Personality	0.742**	1.000		
Service Quality	0.705**	0.838**	1.000	
Intention to Register for Hajj	0.790**	0.718**	0.702**	1.000

** Correlation is significant at the level 0.01 level (2-tailed)

Table 5 shows the correlation between constructs. All constructs were correlated less than 1 and were statistically significant at the $p < 0.01$ level, thus affirming a positive correlation among constructs. All factors are positively interrelated to intention to register for Hajj. The highest positive correlation with intention to register for Hajj is perceived behavioral control ($r = 0.790$, $p = 0.000$). Thus, we can conclude that these three factors have a positive impact on intention to register for Hajj.

Regression Analysis

In this research, a multiple linear regression analysis was conducted to determine the variables that forecasted or offered the most comprehensive explanation for the portion of the overall variance in the score of the dependent variables (Malhotra, 2010). The findings from this analysis are presented in Table 5.

Table 5 shows the Regression Analysis with Intention to Register for Hajj as the Dependent Variable

Independence Variable	coefficient	t-value	sig	Remark
Perceived Behavioral Control	0.523	11.545	0.000**	Supported
Ibadah Personality	0.130	2.176	0.000**	Supported
Service Quality	0.175	3.099	0.000**	Supported
R ²	0.825			
Adjusted R ²	0.674			
F-statistic	115.480			
Sig. F	0.000			

Notes: *significant at 0.05 level, **significant at 0.01

Table 6 presents the result of the regression analysis. The model is significant at a 1 percent level with an F-value of 115.480, and an R-squared value of 0.825, suggesting that 82.5% of the variance in intention is explained by the independent variables. Based on the results of the P-value and parameter estimate (+/-), the three factors namely *Perceived behavioral control* ($p = 0.000$), *Ibadah personality* ($p = 0.030$), and *TH's Service Quality* ($p = 0.002$) were statistically significant at $p < 0.05$ and contributed to 45.9% of the explained variance in registration intention. In terms of Beta weights, three factors namely *Perceived behavioral control* ($\beta = 0.523$), *Ibadah personality* ($\beta = 0.130$), and *TH's Service Quality* ($\beta = 0.175$) contributed significantly towards intention to register for Hajj, respectively. Therefore, the test results have supported H_1 , H_2 , and H_3 .

CONCLUSION

The objective of this study was to explore the correlation between perceived behavioral control, ibadah personality, and service quality concerning the intention to register for Hajj among TH's depositors in Sabah. The study findings revealed that all three factors significantly impact the intention to register for Hajj. These outcomes align with prior research, indicating that intention behavior is influenced by perceived behavioral control (Pitchay, 2019; Shahab Aziz, 2018; Hanudin Amin, 2011), ibadah personality (Yusuf Othman, 2017; Munjaty, 2014; Syed Shah Alam, 2011), and the service quality of TH (Shafinar, 2013). Identifying these influential factors is crucial for TH management to gain insights on enhancing the number of depositors registering for Hajj in Sabah.

Moreover, this study could contribute positively to academic knowledge, particularly within the religious perspective (Islam). The dimensions of ibadah personality used in this research were adapted from Nooraini Othman (2011). According to Nooraini Othman (2011), the study encompassed ibadah and comprised five factors: Fardhu 'Ain, Fardhu Kifayah-Deen, Fardhu Kifayah-Nafs, Fardhu Kifayah-'Aql & Mal, and Fardhu Kifayah-Nasab. Utilizing ibadah personality, all these factors exhibited a significant relationship with the intention to register for Hajj. Furthermore, the study's findings validated the applicability of TPB in gauging depositors' behavioral intentions. Specifically, the dimension of TPB - perceived behavioral control - was identified as a predictive factor for various behaviors, including the act of registering for Hajj. Therefore, this study underscores the importance of perceived behavioral control, ibadah personality, and service quality in influencing intention behavior.

Although this study has provided several important findings, there are limitation in our study. Firstly, the sampling frame of this study was limited to Sabah only, thus it may not be suitable to generalise this finding to all TH depositors in Malaysia. It is suggested for future study to cover all states in Malaysia. Additionally, future research could explore further on the Ummatic Personality by Nooraini Othman (2011), since this study only examine one factor from Ummatic Personality, which was Ibadah. Future research can also be conducted by introducing new variables or other specific measurements that may be relevant to this further study, such as Theories of Perception (Démuth, 2013). This is due to the fact that some depositors felt that the long waiting period for the hajj caused them not to have any intention of registering for the hajj.

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ANTICIPATED AND UNANTICIPATED MONETARY VARIABLES EFFECTIVENESS IN MEASURING FINANCIAL STABILITY IN MALAYSIA DURING CRISIS

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ABSTRACT

The study aims to investigate whether the anticipated and the unanticipated changes in monetary variables can influence the stock returns during crisis. The financial stability was measured by the stock returns which was the dependant variable of the study. The independent monetary variables used were interest rate, inflation rate, exchange rate, money supply and the GDP. All the variables were measured in the form of anticipated and unanticipated monetary variables. The analysis began with unit root test that revealed that both anticipated and unanticipated monetary variables were having unit root problem at level but not at 1st difference. Thus, the variables were found to be integrated at 1st difference. The ARDL method was used to establish the long run relationship and error correction modelling for short run relationship. Monthly data from January 2010 to September 2020 were used. The anticipated monetary variables did have a long run relationship with stock returns, but all the monetary variables were insignificant at 5% significance level. But the anticipated monetary variables did establish a short run relationship with stock returns. Unfortunately, when unanticipated monetary variables were used both short run and long run relationship was established. All the unanticipated monetary variables were significant in explaining the changes in the stock returns except for unanticipated interest rate.

INTRODUCTION

In March 2020, the Malaysian government experienced a health pandemic, and the World Health Organization declared a lock down. The lockdown which began in China was later implemented in various developed and developing nations. It brought the entire world economy to a stand still. The government had no choice but to proceed with the lockdown since the health care system in the country could not cope with the increase in number of cases. There was no vaccine, and the spread was drastic in the early 2020. In Malaysia the massive and ongoing outbreak created a profound impact to the economy especially the financial market. The number of cases began to increase significantly until the government decided to implement movement control order when the financial market was in a verge of collapse. Unfortunately, it brought many sectors into jeopardy. Many workers in the agriculture, tourism, manufacturing, entertainment, service industry was either laid off, receive a pay cut or even force to take unpaid leave. This lead to the closure of many small and medium scale business. Many were not able to sustain themselves. This lead to bankruptcy.

Thus, the government had to weigh the benefit and the cost of the lock down. The benefit would be to prevent the spread of the disease. This will help to flatten the contagion curve as fast as possible and the economy can recover fast. Moreover, the government can also reduce its medical cost if the number of cases declines. This decreases the government expenditure for a country which is already deficit in certain developing countries. Some countries especially the developing countries opt to borrow money or in kind to cope with the pandemic. Contribution in terms of mask, protective outfit for health care workers, gloves and also sanitizers flew in from other countries to collectively combat the virus. If the number of cases declines the need to borrow will also decline.

As for the cost of the lock down, it can be analysed from various perspective. First, the negative consequences of the lock down would be increase in the number of those who have mental health issues like anxiety, depression and panic attacks, increase in domestic violence, suicidal rate and the number of deaths due to other diseases like cancer because there are not enough healthcare workers or facilities to attend to all of them. Second, due to loss of jobs, unemployment increases. This has resulted in loss of income. Loss of income leads to reduced purchasing power in the family which decreases the standard of living. Those in the lower income bracket faces dilemma when they do not have the essential goods to feed their children. Third, the loss of income decreases the demand for goods. A fall in the demand for goods reduces the sales and service tax collected by the government. In addition loss of income also decreases the personal income tax collected by the government. This results in a deficit at the government budget. Based on the evaluation using the cost and benefit analysis and also due to political pressure many countries had to opt to implement the lock down even though by doing so it would cost them more.

In order to curb the economic stress, the Malaysian government came up with various economic stimulus using macroeconomic policies. The fiscal stimulus package was either in the form of cash hand outs or in kind. This helped to boost the economy by increasing aggregate demand in the nation. The increase in aggregate demand creates excess demand. This leads to an increase in price and also output. The Malaysian government found that the increase in the general price level was still manageable during the pandemic. Unfortunately, the cash hand outs were given in a blanket basis. Those who were affected by the pandemic or not were given subsidy by the government as long as you belong to the income bracket or category announced by the government. This resulted in mismatch of resources as well as leakages.

Thus, they decided to further boost the economy by using the next macroeconomic policy, the monetary policy. Monetary policy is one of the tools used by the country to stabilize the economy through price stability. Since many lost their source of income, the government decided to ease the monetary policy by implementing expansionary monetary policy. In this expansionary monetary policy, the government gave a moratorium for six months for those who borrowed money from banks. The moratorium began in April and lasted until September, 2020. The bank rate was also reduced as much as 25 points to encourage borrowing. The aim of the government was to boost the domestic economy. When domestic economy grows, aggregate demand will increase. Output or GDP will increase. Since the inflation or deflation rate was -1.14% thus the expansionary monetary policy was found to be appropriate to boost domestic demand without worrying about the disruption in price stability.

PROBLEM STATEMENT

Even though the fiscal stimulus package and the expansionary monetary policy was implemented, the economic growth declined during the pandemic, many citizens lost their income because they were either laid off or forced to take a pay cut. This automatically reduced the amounts of deposits in the bank. Deposits are essential to create money or money supply. At the same time deposits are also important for the monetary transmission to take place. The effectiveness of the monetary transmission mechanism declined as deposits decreased. The theory quantity of money claims that when money supply decreases, price level will decrease resulting in deflation. The anticipated money supply declined. The money did not have an impact on the real variables like output and employment in the long run. Thus, money was considered neutral. The neutrality of money due to the dynamism of the financial system

to convert all disequilibrium in the money market and capital market to be equilibrium. Moratorium declines the creation of money. A reduction in money supply increase the interest rate because money supply is less than money demand. An increase in interest rate, will increase the demand for bond. Demand for bond increases but the demand for equity declines. The development of the capital market in Malaysia is still below compared to the developed country. Thus, a decline in the demand for equity decreases the trading in the capital market.

Moreover, when deposits decline, the amount to be created as loan or dispersed as credit declines. With the implementation of moratorium for loan owners indicates that the government intervene by practicing expansionary monetary policy. With moratorium the loan owners are exempted from paying loans for 6 months. This reduces money supply. When money supply reduces, money demand will be greater than money supply. To balance the money market to achieve equilibrium, money demand should also be decreased by decreasing income. A decline in money supply will shift the aggregate demand to the left. Thus, price level and output level also decline. Therefore, the objective of the government to maintain price stability, increase output and employment will not be fulfilled. When money supply also decreases through the moratorium, money demand will be greater than money supply. Citizen will be wanting to pay higher interest rate. This increases external premium finance. External premium finance is the interest that the investors are willing to pay which is higher than the market interest to get loan. This encourages adverse selection. The cost of doing business increases. The amount demanded for loan declines due to increase in cost. Investment declines and eventually decreases aggregate demand. A decline in aggregate demand will not be able to increase output and employment. It will further decrease the general price level.

In addition, due to decrease in purchasing power, citizen can resort to alternative source of funding to sustain their consumer expenditure and businessmen resort to authorized and unauthorized money lenders. This created unanticipated money supply. Unanticipated money supply creates shocks in the economy in the short run. This makes money non neutral. Changes in the unanticipated money supply increases nominal variables like price, output and employment. In the long run, changes in the real variables due to unanticipated money supply will be neutral if there is no impact due to a stable, resilient and strong financial system.

From the balance sheet point of view, increase in the cost of borrowing money increases interest expenses. When interest expenses rise, net income declines. A decline in net income will reduce the retained earnings. This reduces owner's equity. Similarly, an increase in interest will stimulate demand for bond but reduces the demand for equity. This also decreases owner's equity. The value of assets decreases and the liability increases through increase in the mortgage for bank and notes payable. Overall, the net worth of the firm declines. This decreases aggregate demand eventually decreasing output, employment and price level. Both bank lending channel and the balance sheet channel are used to explain the credit view under the monetary transmission channel.

Malaysia is a developing nation that depends on the banking system. 70 percent of the financing depends on the banking structure of the country. The financial system in Malaysia is still bank based like India. An increase in interest rate declines investment and eventually the aggregate demand. To stimulate the economy, Bank Negara Malaysia decreased the interest rate as much as 25 points to increase the demand for loans. Distributing loans is also based on credit worthiness. During the health pandemic, the credit worthiness of individual and firms have decline. Thus, the amount of loan distributed will not fulfil

the expectation. Even government reduces interest rate, demand for loan becomes questionable because losing of jobs, decline in pay and reduction in profit. Thus, adverse selection might take place posing a threat to the financial system on increase of non performing loan in the long run. This might not stimulate aggregate demand as expected in the short run but in the long run the banking system should be more cautious with the non performing loans which can destroy the stability of the financial system, decrease output and employment. This is clearly proven by the deflation of -1.14%. In 2020, Malaysia's economy contracted by 5.6 per cent as compared to 4.4 per cent in the previous year. Overall, all sectors recorded negative growth with the Services sector decelerated 5.5 per cent (2019: 6.2%), Manufacturing 2.6 per cent (2019: 3.8%) and Agriculture 2.2 per cent (2019: 2.0%). However, two other sectors, namely Construction and Mining & quarrying sectors recorded two digits decline of negative 19.4 per cent (2019: 0.4%) and 10.6 per cent (2019: -0.6%) respectively. This is known as an effect through bank lending channel.

RESEARCH OBJECTIVES

The overall study aimed to investigate whether the anticipated and unanticipated monetary variables were effective in influencing the financial stability in Malaysia during a crisis.

LITERATURE REVIEW

The Effectiveness of Monetary Transmission Channel in Developing Economics

Ufuk Can, Mehmet Emin Bocuoglu and Zeynep Gizem Can (2020) claims the effectiveness of targeting inflation differs based on the monetary transmission channel used by the central bank of the nation. Turkey, an emerging economy used the interest rate channel where the federal fund rate was changed. The federal fund rate changes influence the output in

Turkey. The fluctuation in the output measured using the vector auto regression method was due to changes in asset pricing and liquidity. Disyatat and Vongsinsirikul (2003) supports that interest rate channel has a great impact on price but it only has a transitory effect on output. Since the economy of Thailand is highly integrated economy thus the exchange rate also has an impact to the economy of Thailand. Similarly, in a small and emerging economy like Sri Lanka, the monetary transmission channel worked effectively in credit channel, exchange rate channel and also the interest rate channel. It had a great influence on the asset price and income.

Study by Kamin, Turner and Van 't dack (1998) claim that understanding and implementing the transmission process is important in designing and implementing the monetary policy. This is because it can influence the balance sheet position, the financial system deepening process and the expectation of the future policy. In recent years it has been argued that monetary policy in any nation should focus on price stability only and not on output or employment. How should we decide the appropriate number for inflation rate, 2 % and 3%. These figures are usually discussed in industrialized nation other than zero. But there is problem in statistical measurement and relative price of adjustment that varies in each sector. The inflation rate is relatively positive and small in industrialized nation. But the inflation targeting in a developing country is much higher. This is because of the political instability that takes place in these countries. Political pressure for the central banks to practice expansionary monetary policy makes it difficult to fulfil monetary policy goals. When a developing country is dependent on international trade, changes in the external factors will influence the exchange rate channel and the money channel through money supply. The financial strength should be strong enough to be able to absorb the shocks as soon as possible. If the country fails in having a sophisticated financial system, then diversification can distort the

stabilization process. In addition, the more integrated and open an economy, inflow and outflow of foreign capital takes place. This makes a country's capital account sensitive to these inflows and outflows. Therefore, it affects the reserve in the official financing of the balance of payment. In a developing nation the amount of reserve is not enough to sustain deficit in the balance of payment. Thus, the monetary policy is used to stabilize the balance of payment as well as the exchange rate of the nation.

Abdul Aleem (2010) stresses that effectiveness of the monetary transmission channel depends on the financial and legal structure of the country. The author claims the effectiveness of monetary policy in the developing nation and emerging economics depends on the influence of central banks like the Federal Reserve, European Central Bank and Bank of Japan. The author claims that India has a bank-based economy. Since 2005, bank credit to the commercial sector accounts for more than 70 percent of the total domestic credit. The ratio of currency deposits has declined since 1999. Thus, it is proven that bank is an important financial intermediation and non financial institution lacks alternative sources of funding. The empirical evidence proved that the bank lending channel plays an important role in transmitting the changes in the money supply impact towards the real sector. The bank lending channel was also deemed important because the lower market capitalization by the listed company in India compared to developed country shows that India's capital market is not fully developed. Asset pricing channel did not really influence the real sector. Moreover, the Reserve Bank of India always practice unanticipated changes in money supply to stabilize the exchange rate. This further weakens the exchange rate channel.

Ooi Sang Kuang (2020) states that Malaysia's financial system can be characterised as full of banking services, growing capital market and international openness. The total assets of the financial system is 386 percent of

the country's GDP where more than 50 % of the financial assets originates from the banking system. This means that banking system is an important financial intermediary in Malaysia. Since the financial crisis that took place in 1997, there has been a significant change in the financial system in Malaysia. Before the crisis, the banking system consists of large number of small companies. After the crisis, in 1998 the banks merged and consolidated into nine domestic banks. By 2006 the banks were more resilient, effective, competitive and responsive towards the changes in the economic conditions. The strengthening of the financial restructuring has improved the balance sheet of the financial institution. Later the financial institution began to focus in upgrading the operation efficiency for their customers. This was supported by the internal study conducted by Bank Negara Malaysia. The study revealed that bank efficiency increased due to declining trend in the net interest margin. The tight interest margin was found to be associated to bank efficiency in many studies conducted by previous researchers. This was followed by Bank Negara Malaysia in designing the New Interest Rate Framework in 2004 which resulted in liberalization at asset pricing. This increased the level of competition in the financial system.

Since the crisis, Malaysian had greater proportion of loans allocated for households and businesses. They can raise capital by the issuance of bond and equity through the banking system. These progress shows the development of the capital market. This also improved the availability of funds through private debt securities and equity. The increase in bank competition and efficiency enables the transmission of the monetary policy to be effective. The pass-through effect of the interest rate channel will not be disrupted. Unfortunately, almost 87 % of SME financing comes from sources other than the banking system. It comes from the self funding, informal sectors, government grants and development fund from foreign sources. These funds are distributed below the

market rate to the SME-s. This will cause the effectiveness of the transmission of monetary policy distracted. Moreover, the Bank Negara Malaysia has numerous times intervene in the money market to strengthen the exchange rate for Ringgit Malaysia. This has disrupted the exchange rate channel in the monetary transmission channel.

METHODOLOGY

The study aims to investigate the effectiveness of the monetary policy implemented by the government to overcome economic stress due to crisis created by political scandals and health pandemics and financial crisis. The economic stress in a country can be identified by measuring the financial stability of the country. Monetary policy has a significant impact on the country's financial stability because it deals with the Central Bank that maintains the reserve which is stated in the Balance of Payment and the exchange rate stability. Monetary policy also deals with controlling of money supply that can influence the inflation rate and the interest rate. Thus it can be concluded that monetary policy is a highly sensitive macroeconomic policy that deals with both internal and external shocks. It is not political driven policy like the fiscal policy. The monetary policy oversees the financial performance of the country through monetary variables like interest rate, inflation rate, exchange rate and money supply. The data published in the Financial Reports are all known as anticipated variables. Unfortunately, Malaysia is a country that experiences various shocks both internal and external. These shocks created the variables to be extremely volatile. Volatility results in risk. The risk created by these volatilities is known as systematic risk which cannot be diversified through diversification in portfolio. The impact of this risk can be reduced through a stable financial system. In economics, researchers look at the impact in two time frame, short run and long run. If the impact of the shocks influences the monetary variables in the short run or long

run, it can be concluded that the financial system was not able to absorb the shocks at the specific time period. Thus, the financial system was not strong enough to enable the shock to be neutralized and does not influence the stock returns. A sustainable, resilient and strong financial system is a system that is able to absorb shocks fast and neutralizes its impact. Unlike monetary policy, fiscal policy is more discretionary because the decision to spend as government expenditure and collect tax differ according to the political needs of the country.

Most researchers in the field of finance or economics usually use the anticipated variables to do the analysis. But the anticipated variables does not reflect the real situation. It has statistical adjustments to the data to overcome missing values. It does not include the leakages and the mismanagement. All these issues are usually included in the error term. The error term reflects the deviation between the predicted and the actual observation. Since the expected value does not reflect the real value, the deviation is the element that needs to be considered in the policy making. It reveals the shock. Thus this study did not only use the anticipated monetary variables but it used the unanticipated monetary variables. The unanticipated monetary variables were taken from the study done by Barro (1980) and by Geetha (2010). The anticipated monetary variables are regressed with lagged one and two of the anticipated monetary variables. The error term obtain from the regression of each monetary variables will be powered by two to obtain the variance. The variance represents the unanticipated monetary variables. Thus the monetary variables chosen in this study were interest rate, exchange rate, consumer price index and money supply M_2 . All these variables were converted to unanticipated. The data was obtained from the Malaysian Financial Report from January, 2010 till September, 2020. There was a monthly observation of 117.

The analysis began by running a unit root test. The ADF and the PP tests aims to

identify whether the monetary variables were stationary. The monetary variables were run three times. First the anticipated monetary variables. Second the unanticipated monetary variables and third as the averaged unanticipated monetary variables. The aim is to determine the differences in the results obtained which the policy makers should take into consideration. The variables were run at level and first difference. The unit root test was run with only intercept and intercept with trend. The unit root did not include the structural Breaks. The result revealed that at level both intercept and intercept with trend were not stationary for all the monetary variables in anticipated, unanticipated and averaged unanticipated form. The variables were only stationary at first difference.

The analysis extended to determine the long run relationship between the different forms of monetary variables with the stock returns. The anticipated monetary variables were found to bound or establish long run relationship but unfortunately all the monetary variables were insignificant at 5% significance level. But when the monetary variables were converted into unanticipated monetary variables, the bound was established in the long run. In addition other than unanticipated interest rate, all other monetary variables like unanticipated money supply M_2 , unanticipated exchange rate and unanticipated consumer price index were able to explain the changes in the stock returns at 5% significance level in the long run. When the averaged unanticipated monetary variables were used, the bound test failed to establish the long run relationship and the monetary variables were also found to be insignificant at 5% significance level.

This was followed by the establishment of short run relationship between the different form of measuring monetary variables with stock returns. The anticipated monetary variables seem to have a short run relationship with stock returns. Similar outcome can be found when the averaged unanticipated

monetary variables were used. The error correction term had a negative sign and it was significant at 5% significance level. The negative sign and the significance show the dynamics for the equation to reach equilibrium in the long run. When the unanticipated monetary variables were used, the coefficient terms were significant but positive. The result

indicated that it is positive and significant because the vector error correction was run using second differences. If the vector error correction is run with first differences than it will show a negative sign and significant. Finally, diagnostic test was conducted for the error term for serial correlation, heteroscedastic and normality.

FINDINGS

Unit Root Test Results

Table 1 shows the Augmented Dickey Fuller Test without the structural break (without converting it to unanticipated values)

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGCPI	-1.8254	0.3668	-8.6657	0.0000	-0.6854	0.9715	-8.962	0.0000
LGEXCR	-0.926	0.7772	-7.6000	0.0000	-2.692	0.2418	-7.584	0.0000
LGIR	-1.5251	0.517	-13.889	0.0000	-1.8114	0.6936	-13.921	0.0000
LGM2	-2.419	0.1385	-11.760	0.0000	-1.7045	0.7843	-12.215	0.0000
LGSR	-1.3015	0.627	-11.523	0.0000	-3.137	0.1022	-11.507	0.0000

Table 1 shows the Augmented Dickey Fuller test results using anticipated monetary variables. The data were tested using the intercept and also intercept with trend. The monetary variables tested were consumer price index, exchange rate, interest rate, M_2 of money supply and stock returns. At level, all the monetary variables were found to be insignificant. This is because the estimated T Statistics for all the monetary variables had a probability value of greater than 0.5. Thus it can be concluded the variables were insignificant at 5 % significance level. They were not stationary at levels. When the variables were differentiated at 1st difference, the estimated T Statistics for all the anticipated monetary variables had a probability value of less than 0.5. Thus it can be concluded at 1st difference all the monetary variables were significant at 5% significance level. Thus it can be concluded that all the monetary variables included in this study were stationary at 1st difference. Similar result was also found when the data were analysed using intercept and trend. This indicates after differentiating the data by including intercept and trend, the data became stationary at 5% significance level.

Table 2 shows the Augmented Dickey Fuller Results for unanticipated monetary variables

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGUCPI	-1.7804	0.3887	-8.6740	0.0000	-0.7223	0.9687	-8.894	0.0000
LGUEXCR	-0.9735	0.7612	-7.5550	0.0000	-2.662	0.2543	-7.536	0.0000
LGUIR	-1.799	0.3795	-13.587	0.0000	-2.0360	0.5756	-13.591	0.0000
LGUM ₂	-2.282	0.1791	-11.799	0.0000	-1.698	0.7466	-12.198	0.0000
LGUSR	-1.258	0.647	-11.499	0.0000	-3.102	0.110	-11.440	0.0000

Table 2 shows the Augmented Dickey Fuller test for unanticipated monetary variables. The variables were tested with intercept and also with intercept and trend. But the monetary variables were converted into unanticipated values following the Barro (1988) method. At the level, the unanticipated monetary variables had an estimated T value with probabilities higher than 0.5 indicating

the unanticipated monetary variables were not stationary at 5 % significance level. But when the values were differentiated at 1st difference, all the unanticipated monetary variables were significant at 5% significance indicating the variables were stationary at 1st difference. Similar outcome was found when the intercept and trend were included in the analysis.

Table 3 shows the Philip Perron test result for anticipated changes in monetary variables

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGCPPI	-1.812	0.373	-7.952	0.0000	-0.531	0.981	-8.193	0.0000
LGEXCR	-0.743	0.8300	-7.483	0.0000	-2.229	0.4688	-7.466	0.0000
LGIR	-1.082	0.721	-3.973	0.002	-1.139	0.7917	-4.994	0.0004
LN2M	-1.448	0.556	-1.696	0.430	-3.077	0.116	-1.793	0.701
LGSR	-0.816	0.810	-3.333	0.015	-3.134	0.103	-3.430	0.052

Table 3 shows the anticipated values of the monetary variables where the Philip Perron stationary test was conducted. The estimated T values at the level showed that the variables were not stationary at 5% significance level for both intercept and intercept with trend. This was due to the probability values of the estimated T values were more than 0.05. In contrast when the anticipated values of the monetary values were differentiated at 1st difference, the estimated T values all had a probability value of less than 0.05. Therefore, the variables were stationary at 1st difference with intercept and intercept with trend. Table 4 shows the stationary test result for Philip Perron when the monetary variables were converted to unanticipated with intercept and intercept with trend. The result revealed that at level the estimated T Statistics for the unanticipated monetary variables were having probability values of more than 0.05. In contrast when they were differentiated, the probability values of the estimated T Statistics showed values less than 0.05. This means the unanticipated monetary variables were all stationary at 1st difference.

Table 4 shows the Philip Perron with unanticipated variables

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGUCPI	-1.765	0.396	-7.599	0.0000	-0.602	0.977	-8.223	0.0000
LGUEXCR	-8.209	0.809	-7.512	0.0000	-2.259	0.453	-7.493	0.0000
LGUIR	-1.468	0.546	-14.042	0.0000	-1.727	0.773	-14.249	0.0000
LGUM ₂	-2.323	0.166	-11.788	0.0000	-1.694	0.748	-12.916	0.0000
LGUSR	-1.258	0.647	-11.486	0.000	-3.183	0.092	-11.479	0.0000

Table 5 shows the bound test result for the anticipated monetary values

Test statistic	Value
F-statistics	3.1633

Table 5 shows the bound test result between the anticipated monetary variables and the stock returns. The result revealed that the estimated F Statistics had a value of 3.1633. This indicates that the estimated F Statistics value was greater than the critical value of F for the bound test at level I(0) which is 2.56 at 5% significance level. This means the anticipated monetary variables will bound and create a long run relationship at level. It can bound and create a long run relationship at level (2.2) and 1st difference (3.09) at 10% significance level because the estimated F Statistics are greater than the mentioned critical value.

Table 6 shows the coefficient and the estimated T values for the anticipated monetary variables at different lag length.

Independent Variables	ARDL(1, 0, 2, 2, 0)
LGCPi	-0.6129 (0.5411)
LGEXCR	1.5611 (0.1213)
LGIR	0.0484 (0.9143)
LGM2	0.8103 (0.4424)
C	0.0062

Table 6 indicates the long run relationship between the anticipated monetary variables

and the stock returns at different lag length. All the anticipated monetary variables were insignificant at 5% significance level. This is because the estimated T values were less than the critical value of T at 5% significance level. The anticipated monetary variables were insignificant in establishing long run relationship with stock returns.

Table 7 shows the ECM for the anticipated monetary variables and the stock returns

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)	-0.113396	0.025396	-4.465054	0.0000

Table 7 shows the error correction term has a coefficient with a negative sign and it is significant at 1% significant level ($t = -4.465054$, $p = 0.0000$). This indicated that there is short run relationship between the anticipated monetary variables and the stock return. Table 8 reveals the diagnostic test for the long run relationship between the variables. For the serial correlation, probability value of 0.7566 indicates hypothesis null cannot be rejected. Thus it can be concluded that there is no serial correlation in the model. Similarly the heteroskedastic reveals a probability value of 0.2277. Hypothesis null cannot be rejected. There is no heteroscedastic problem in the model. Finally the normality test confirms that hypothesis null cannot be rejected that the data is normally distributed.

Table 8 shows the correlation analysis on the anticipated monetary variables and the stock returns

Correlation	LGSR	LGM2	LGEXCR	LGIR	LGCPi
LGSR	1.000000				
LGM2	0.716433	1.000000			
LGEXCR	0.748270	0.818075	1.000000		
LGIR	-0.097179	-0.293198	-0.061905	1.000000	
LGCPi	0.7777526	0.964210	0.888186	-0.147159	1.000000

Table 8 shows that there is a strong relationship between money supply M_2 and stock returns. Similarly, there is also a strong relationship between consumer price index and exchange rate with stock return where respectively the correlation value is 0.716433, 0.748270 and 0.7777526. The value of money supply M_2 and consumer price index seem to have a correlation value of 0.964210 which is greater than 0.9 indicating the existence of multicollinearity problem. The relationship between consumer price index and the exchange rate also high with a correlation value of 0.888186. Since

the value does not exceed 0.9 thus it need not necessarily be removed. No doubt consumer price index and money supply M2 have a high correlation, but the variables were not removed since the aim of the study was to see the effectiveness of the monetary policy in handling the crisis. Thus the inclusion of all monetary variables were important.

The study was extended by converting all the anticipated values of the monetary variables to unanticipated. The bound test result in Table 9 shows that the estimated F Statistics was greater than the critical value of F at 1 percent significant level. Thus it can be concluded that the unanticipated monetary variables bound with the stock returns in the long run.

Table 9 shows the bound test result between the unanticipated monetary variables and the stock returns

Test statistic	Value
F-statistics	23.5E+27

Table 10 shows the long run relationship between the unanticipated monetary variables and the stock returns

Independent Variables	ARDL(1, 0, 2, 2, 0)
LGUCPI	5.510669 (0.0000)
LGUEXCR	-3.953752 (0.0001)
LGUIR	-0.815517 (0.4164)
LGUM ₂	-4.776219 (0.0000)
C	0.0020

Since all the monetary variables were converted to unanticipated values, the ARDL shows that unanticipated consumer price index, unanticipated exchange rate and unanticipated money supply of M₂ were significant in explaining the changes in the stock returns in the long run with the probability values of 0.000, 0.0001 and 0.0000 respectively. The unanticipated consumer price index had a positive coefficient. This means that when consumer price index increases the stock returns increases. But the unanticipated exchange rate and the unanticipated money

supply M₂ both had negative relationship with stock returns. The only monetary variable that did not influence stock returns was the unanticipated interest rate (Refer to Table 10). Table 11 shows the short run relationship between the unanticipated monetary variables and stock returns.

Table 11 shows the error correction modelling between the unanticipated monetary variables and the stock returns

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)	-0.517331	3.84E-09	1.35E+08	0.0000

Table 11 reveals that the error correction term was significant and negative. This means there is a short run relationship between the unanticipated monetary variables and the variables were dynamic enough to reach equilibrium if there was disequilibrium in the economy. Table 17 shows the diagnostic test results. The findings revealed that there was no serial correlation problem, heteroscedastic issues as well as normality problem when unanticipated monetary variables were used in establishing the long run and short run relationship with stock returns.

CONCLUSION

The study aimed to identify the effectiveness of the monetary policy in influencing the financial stability during a crisis in Malaysia. The monetary variables were differentiated into anticipated and unanticipated monetary variables. The financial stability was measured using stock returns meanwhile the monetary variables were represented by money supply, consumer price index, interest rate and exchange rate. Monthly data from January 2010 to September 2020 were used. The analysis began with a unit root test followed by ARDL and error correction modelling. Therefore, it can be concluded the best result was obtained when the unanticipated monetary variables were used to establish long run and short run relationship with stock returns.

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INVESTIGATING FACTORS INFLUENCING INTENTION TO BE PROFESSIONAL ACCOUNTANT AMONG HIGH SCHOOL STUDENTS

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ABSTRACT

This study examines the factors associated with high school students' intent to pursue a career as a professional accountant. The study was prompted by a report that in 2020 the number of professional accountants in Malaysia was short of target. A research model was developed based on the theory of planned behavior and data from 110 respondents were analyzed. Data for this study was collected through an online survey. Targeted sampling was used to collect the data. The descriptive analysis was performed with SPSS 26, while the measurement model analysis was performed with SmartPLS 3.0. Based on the results, there are significant associations between attitudes, the influence of friends and family, the influence of teachers, and perceived behavioral control regarding the intention to pursue a career as a professional accountant. The findings have implications for the role of parents and teachers as the most important people in students' lives in deciding their future career as a professional accountant. The outcome of this study is intended to provide parents, teachers, and the school with information to develop positive attitudes in students and influence them in a way that may lead them to consider becoming a professional accountant.

INTRODUCTION

The decision of selecting a career choice is an indispensable element especially among high-school students. With regard to a career in accountancy, specifically in becoming a professional accountant in Malaysia, is a long-path journey as those interested must have a recognized degree or professional qualification in accounting and have at least three years of accepted experience to become a qualified accountant. Meaning to say, after completing the *Sijil Pelajaran Malaysia* (high-school level), students are required to continue their studies in accounting courses for approximately three to four years and subsequently to complete a professional accounting courses such as the Association of Chartered Certified Accountants (ACCA), Certified Practicing Accountants of Australia (CPA Australia) and Institute of Chartered Accountants Institute of Management (CIMA), the Institute of Chartered Accountants of Australia (ICAA), the Institute of Chartered Accountants of England and Wales

(ICAEW), the Malaysian Institute of Accountants (MIA), and the Malaysian Institute of Certified Public Accountants (MICPA). The duration of these courses varies, up to six years or more. Overall, it can take about 10 years (or more) from the high-school level, before an individual can join the MIA and practice as a professional accountant.

Five-year (2016-2020) statistics show that the number of professional accountants in Malaysia increased from 32,361 to 36,365 (MIA, 2016-2018, 2020). However, the target of 60,000 accountants for 2020 set in the National Economic Transformation Program was not attained. The Malaysian government has attempted to increase the number of professional accountants in the country by offering accounting diplomas and degrees to a pool of potential candidates through universities and colleges, but the desired result has not been achieved. Additionally, of the 41,000 MIA-accredited accountancy graduates since 1978, only 31% joined the

MIA in 2015. Among its peers, Malaysia has the highest population-to-accountant ratio in Asia, with one accountant serving 950 people, behind Singapore at ratio 1:184 and Hong Kong at 1:195.

The United Nations recognizes that the accounting profession is an essential engine for strong and sustainable organisations, financial markets and economies. Therefore, it is important to address the shortage of professional accountants in Malaysia. This study helps examine the factors that influence intention to pursue a career as a professional accountant. Specifically, the aim of this study is to identify the factors that influence high school students' intent to become professional accountants.

LITERATURE REVIEW

The Theory of Planned Behavior (TPB) is relevant as a guide for the study because it explains a person's intention to behave at a specific time and place. Ajzen's (1991) TPB posits that behavioral intention is influenced by attitude toward an aspect, social norm, and perceived behavioral control. Since the perception of the individual influences a subject's evaluation and thus behavioral intention, studying behavioral intention is just as good as studying actual behavior (Ki and Hon (2012). In other words, intention is a good indicator of behavior. Ki and Hon's (2012) statement fits the study very well because the journey to becoming a professional accountant takes many years for high school students, which improves the understanding of the factors involved in intending to pursue a career as a professional accountant would allow stakeholders to intervene proactively in encouraging the number of accountants.

Attitude toward behavior is a person's assessment that performing an action will produce a pleasant or bad outcome that influences their behavior (Mihartinah & Corynata, 2018). Depending on the context of

study, high school students who believe that earning a chartered accountant certification is beneficial and can bring them good professional values tend to develop a desire to earn a chartered accountant certification. Zakaria and Ahmad (2021) show empirically that attitudes about the incentives and opportunities offered by the accountancy profession have a greater impact on intention to enroll in accounting majors. Their study also concluded that students' attitudes toward the accounting profession in terms of good long-term income, job variety, career exit, and career advancement opportunities have an even greater impact on their intent to choosing accounting as the preferred major. This is supported by previous evidence (Pratama, 2017; Hoai et al., 2016; Rababah, 2016). Likewise, Mustapha et al. (2012), Mbawuni and Nimako (2015), Suhaily et al. (2016) and Owusu et al. (2018) shows that behavior is more real when there is a positive attitude towards the accounting profession. Consequently, the study assumes that students with positive attitudes towards the accounting profession have a higher intention to pursue a career as a professional accountant (H1).

Subjective norms consist of a mixture of beliefs and normative motivations (Ajzen & Fishbein, 1975; Ajzen, 1985). Normative belief is social peer pressure in which high-school students' opinions are influenced by social groups such as family, friends, teachers, counselors, and classmates, ultimately influencing their decisions about becoming an accountant. Yardımcıoğlu and Ada (2015) explain that social influence influences students' career choices. In the study, Palos and Drobot (2010) argue that the decision-making process of high-school students is influenced by family members as they symbolize the element of support and stability. Although the influence of friends does appear in students' career choices as accountants, Hashim and Embong (2015) explain that family members, particularly parents, have a greater influence on students' career choices than friends, as advice from friends is generally considered relatively less important be considered.

Deciding on a suitable career choice is always a challenge for most students as it is a new situation for most of them (Safta, 2015). Choosing a career as a teenager is very likely to be associated with ambivalence. It is important that young people get the necessary information and advice before accepting a specific job as it can change their future. Therefore, qualified teachers in most Malaysian secondary schools also act as advisors to encourage behavior, including career choices. There is a close connection between counseling and career choice (Amoah et al., 2015). Wen et al. (2015) found that family, friends, and teachers encourage students to act, and this includes career choice as an accountant. This is consistent with studies such as Hashim and Ghani (2020), which also found that parents, friends, relatives, and teachers are among the important people influencing a student's intent and decision to pursue an accounting career. Therefore, it can be expected that H2: High-school students tend to be influenced by family and friends when making career choices; and H3: The influence of the teacher can affect the career choices of high school students.

Perceived behavioral control refers to a person's perception of difficulty in performing a desired behavior, which is related to a belief that the resources and opportunities required to perform particular behaviors are available based on past experience and anticipation of obstacles (Ajzen, 1991). Artati et al. (2020) argue that perceived behavioral control influences behavioral intent to obtain a Chartered Accountant, meaning that student opinions have a significant and positive impact on their decision to obtain a Chartered Accountant qualification. In support of this finding, Solikhah (2014) found that perceived behavioral control had a positively significant association with students' desire to pursue a career as a professional accountant. Based on this, perceived behavioral control is determined by the entire collection of available control beliefs and subsequently has an impact on intention. Consequently, H4

postulates that if high-school students have more control in making selection about career choice, they have more intention to pursue a career as professional accountant. The four research hypotheses is shown in Figure 1.

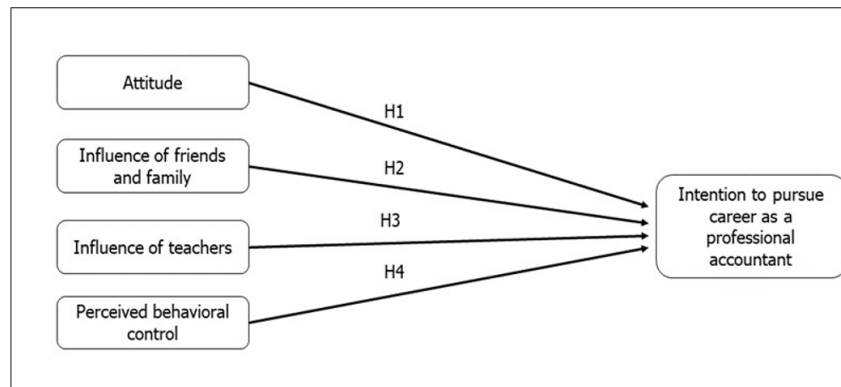


Figure 1 Shows the research framework METHODOLOGY

The study used quantitative analysis using the primary data where questionnaire was the instrument of the study. The response obtained from form five students indicates purposive sampling method was used as a sampling method. Around 110 responses obtained from the online survey was used. The dependent variable is the intention to pursue career as professional accountant meanwhile the independent variables were attitude, influence of parents, influence of family and friends and finally the perceived behavioural control. The analysis began with the descriptive analysis used to describe the characteristics of the respondents, followed by the measurement of model assessment, correlation ratio and the result from the hypothesis testing.

DATA AND FINDINGS

The respondents are form-five students who have not yet decided on a field to venture in. The study used purposive sampling. Using G-power from Faul et al. (2007) a minimum sample size of 107 is sufficient. The survey includes 110 respondents, 35.5% are male

and 64.5% are female. The proportion in term ethnicity are 55.5% Bumiputra Sabah/Sarawak, 25.5% Chinese, 10% Malay, 1.8% Indian, and all others accounted for 7.3%. Fifty-nine respondents (53.6%) indicated that they are taking the subject of Principal of Accounting as an elective subject while the remaining 51, or 46.4%, do not. The full respondents' profile is in Table 1.

Table 1 Profile of Respondents

Demographic Variables	Categories	Frequency	Percent age
Gender	Male	39	35.5
	Female	71	64.5
Ethnicity	Malay	11	10
	Chinese	28	25.5
	Indian	2	1.8
	Bumiputera		
	Sabah/Sarawak	61	55.5
	Other	8	7.3
Principal of Accounting one of elective subjects	Yes	59	53.6
	No	51	46.4
Total		110	100

Measurement Model Assessment

The evaluation of the measurement model consists of two parts. It tests convergent validity and discriminant validity. Convergent validity is assessed based on outer loadings, internal consistency reliability, composite reliability, and average variance extracted (AVE) (Hair et al., 2010). As shown in Table 2, the AVEs for Attitude (ATT), Influence of Friends and Family (IFF), Influence of Teachers (IT), and Perceived Behavior Control (PEB) exceeded 0.5, with the lowest at 0.795, which suggests sufficient convergent validity. The loading values are above 0.69, which is acceptable (Hair et al., 2010), suggesting that the constructs meet the internal consistency reliability requirement.

Table 2 shows the Measurement Model Assessment

Construct	Items	Loadings	Composite Reliability	Average Variance Extracted(AVE)
Attitude	ATT3	1.000	1.000	1.000
Influence of Friends and Family	IFF1 IFF2 IFF3 IFF4	0.857 0.924 0.932 0.852	0.939	0.795
Influence of Teachers	IT1 IT2 IT3	0.910 0.910 0.938	0.943	0.846
Perceived Behavioral Control	PEB1 PEB4	0.929 0.923	0.954	0.839
Intention to Pursue Career as a Professional Accounting	INT1 INT2 INT3 INT4	0.904 0.891 0.936 0.933	0.923	0.857

The assessment of discriminant validity is based on the ratio of an indicator's correlations with its own construct to the indicator's correlations with other constructs, or the Heterotrait- Monotrait (HTMT) criterion (Henseler et al., 2015; Franke & Sarstedt, 2019). The upper limit for the HTMT should be below 0.85 according to stricter criteria. As can be seen in Table 3, all HTMT values are within the threshold and therefore the model satisfies the discriminant validity requirement.

Table 3 shows the Heterotrait-Monotrait (HTMT) Correlation Ratio

Constructs	1	2	3	4	5
2. Attitude					
2. Influence of friends and family	0.543				
3. Influence of teachers	0.538	0.749			
4. Intention to be professional accountant	0.796	0.747	0.786		
5. Perceived Behavioural Control	0.647	0.725	0.711	0.827	

Structural Model Assessment

It is necessary to confirm that no multicollinearity exists that may bias the regression results. The VIF value is ideally less than 3.3, although generally values below 5 are acceptable (Hair et al., 2019). As shown in Table 4, the VIFs are less than 3.3, indicating there is no lateral collinearity problem.

Table 4 shows the result of the Hypothesis Testing

Hypothesis	Relationship	Std. Beta	Std. Error	t-value	p-value	BCI LL	BCI UL	f ²	VIF
H1	Attitude à Intention to pursue career as a professional accountant	0.422	0.068	6.177	p < .001	0.299	0.610	0.502	1.666
H2	Influence of friends and family à Intention to pursue career as a professional accountant	0.159	0.076	2.095	0.021	0.019	0.186	0.053	2.256
H3	Influence of teachers à Intention to pursue career as a professional accountant	0.267	0.072	3.689	0.002	0.0732	0.125	0.155	2.171
H4	Perceived behavioral control à Intention to pursue career as a professional accountant	0.214	0.085	2.516	0.010	0.024	0.193	0.101	2.118

There are four hypotheses in this study. The standard coefficients of the independent variables are positive. The t-values and p-values exceed the threshold of 1.645 and below 0.05 respectively, supporting all test hypotheses. Significant associations between the four predictors and the dependent variables are also confirmed using the lower level (LLCI) biased confidence interval (BCI) and upper level BCI (ULCI) for which all values are not between the value 0. Two values of f^2 are greater than 0.02, indicating a small effect size, one medium effect size (greater than 0.15), and one large effect size (greater than 0.35). Effect size values are evaluated based on Cohen (1988). The R-squared value of 0.787 indicates 78.7% variance of the dependent variable is explained by the four predictors.

CONCLUSION

The study empirically shows existence of direct relationships of attitude, influence of friends and family, influence of teachers, and perceived behavioral control towards the intention of pursuing a career as a professional accountant among high-school students. It confirms that the TPB fits appropriately in explaining high-school students' intention about selecting a career as professional accountant.

In practice, stakeholders who aspire to a career in accounting are advised to establish programs that go beyond awareness. While awareness of the accounting profession is important, it may not be enough to convince high-school students to choose accounting majors or courses. For instance, despite efforts to promote accounting education and careers, the goal of reaching the desired number of

professional accountants for Malaysia is still far-reaching. Therefore, awareness programs are ineffective as this trait only allows students to understand a given topic from multiple angles but does not imply an innate understanding of the topic. Rather, program design, which aims to encourage greater participation to become professional accountants, must be able to convey a positive attitude towards employment as professional accountants. Cognitively, the development of attitudes is superior to awareness and proven empirically that attitude has strong association with behavioral intention.

This study provides evidence that young Malaysians have strong bonds with family and friends that extend to work-related issues. Because family and friends provide them with a sense of identity and a strong-supportive relationship, high school students broadly agree that consideration should be given to what their family and friends think about job selection. Given the important role of family institutions in shaping the careers of young Malaysians, proponents of the accounting profession could incorporate programs aimed at educating parents about the benefits and prospects of accountancy. Consequently, parents would lend more support in leading their children to consider a career in this field.

The study points to the important role of teachers in shaping the career paths of students. Institutions related to accounting can support the expansion of teachers' knowledge on the way to becoming an accountant. Better informed teachers can advise more effectively and increase student interest. Supporters of the accounting profession can also support by setting up more accounting clubs in schools across the country. By using the club platform, schools and teachers have more opportunities

to engage students in accounting-related matters, and in long run, shape positive perception and attitude about accounting career among students.

Although the social-norm factors play significant role in influencing students' career intent, the study found that resources adequacy and perceived obstacles significantly affect students' intention to be professional accountants. In other words, students with better feeling of control on accounting topics are more likely to embark into accounting career. Accounting profession requires ones to possess the capacity to apprehend numbers and calculations. They must master to combine mathematical, circumstantial, and strategic know-how to create and convey viewpoints and information. In efforts to promote favorable perceived behavioral control in becoming an accountant, school could implement strategy toward academic curriculum that promote improvement of students' numeracy skill. Although it probably sounds daunting, this task is achievable even for less resourceful schools because accounting does not require high-level mathematical skills. It is basic summation, subtraction, multiplication, division, as well as basic algebra. Perhaps future study can examine the impact of numeracy skills, both perceived and actual, toward intention to select accounting profession.

In summary, even though the study does not provide major theoretical advances, the study adds contextually to knowledge by identifying the factors influencing students' intent to become professional accountants. The study outlines practical solutions that stakeholders can adopt as part of their mission to address the shortage of professional accountants.

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TAX COMPLIANCE ECONOMY AMONGST TAXPAYERS IN KOTA KINABALU

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ABSTRACT

The gig economy is a term used to describe an economic activity in which many short-term jobs are available, rather than permanent jobs, and is considered one of the various business models in the gig economy. This study examines taxpayers' views on their level of taxpayer awareness, trust in government and tax socialization on tax compliance in the gig economy. This paper therefore provides new insights into tax compliance studies by introducing the concept of gig entrepreneurship, which is increasingly becoming a popular segment of the economy, especially among the younger generation. The study was conducted among 10 participants in Kota Kinabalu, Sabah and an in-depth interview was used to collect data for this study. Thematic analysis was used to analyze the data. The findings of this study can be useful for the government to create a clear tax framework in promoting the gig economy in order to expand the tax base for the government.

INTRODUCTION

Economic activities in Malaysia are experiencing exponential growth, driven by the penetration of technology into various sectors (Tambunan and Rosdiana, 2020). The Malaysian Communications and Multimedia Commission (2017) reports that from 12% in 2011 to 75.9% in 2017, smart phone usage in Malaysia increased significantly. One of the

many business models in the e-commerce is the gig economy (IRBM, 2022). The gig economy grew rapidly in 2020 alone, gave rise to new digital technologies, and caused traditional brick and mortar enterprises to move their business models online, according to the Malaysia Digital Economy Blueprint 2021. Due to this, gig economy platforms have grown in popularity, with e-hailing and online products delivery—including food delivery—being the two main services offered by these platforms (Furuoka, Uchiyama, Lim, Pazim, Aruchunan, Paid, Nikitina and Omar, 2022).

The gig economy is currently being accepted at a spectacular rate by individuals and companies of all sizes (Abdul Rahim, Yaacob, Mohd Noor, Najid and Zulkifli, 2021). As of April 2021, there were about four million freelancers in Malaysia; this number is expected to increase over the coming years, particularly as many gig workers are members of the younger, more technologically literate age. In addition, a lot of people who have lost their employment due to the epidemic are resorting to online platforms in order to support themselves (Lim, 2021). Thanks to technology advancements, people can work at their own pace and are no longer constrained by physical places, which has led to the growth of the gig economy. As a result, businesses usually hire freelancers and independent contractors rather than full-time workers, and jobs are usually temporary and flexible (Ahmad, 2020).

In response to this, the digital economy is being included in the 12th Malaysia Plan 2021–2025 as a new source of economic growth, increasing Malaysia's GDP as recently established by the Malaysian government (Lim, 2021). By 2025, the government also plans to put in place a suitable tax structure to collect gig economy earnings. This is due to the fact that the Economic Planning Unit's (EPU) 12th Malaysia Plan document projects that by 2025, the digital economy would account for 25.5% of the nation's GDP. The emergence of the gig economy presents

profound challenges in Malaysia, as Wahab and Bakar (2021) expressed that the field of gig economy income tax compliance is still in its infancy stage in Malaysia.

There are certain challenges in relation to taxing the digital economy, by which tax systems are needed to be ready to meet the changes brought by the digital transformation as well as to leverage upon the opportunities (OECD, 2014). Frenken and Schor (2017) implied that many people are "not even aware that taxes should be paid," suggesting that these people run the risk of not complying with the law. It was also stressed that these individuals would view gig economy transactions as "short, single, and private," meaning they are not subject to taxes. In a similar vein, people may assume that income-generating activities conducted online, such earnings from a YouTube channel, are private in nature and do not require disclosure for tax purposes. Furthermore, persons who are unaware of 'who is accountable for paying taxes' may unintentionally wind up breaking the law and this is a challenge to the Inland Revenue Board of Malaysia (IRBM) (Wassermann and Bornman, 2020). Hence, the objectives of this study are formulated as follows:

1. To identify taxpayers' view on tax compliance in the gig economy
2. To identify the measures that government can implement to enhance trust and tax compliance among gig economy workers
3. To identify the practical ways of updating with current tax updates

LITERATURE REVIEW

"Gig economy" in the tax compliance context

The government has traditionally benefited greatly from the tax collection (Nawawi, Hamid, Yusop, Ghazali, and Rashid, 2020). It is one of the most important sources of income for the government and has a close relationship

with government spending, which supports economic expansion (Kim and Lee, 2020). The term “gig economy” describes people who, as opposed to working for an employer, have temporary jobs or perform independent tasks for which they are paid individually (IRBM, 2022). It is turning into a more and more well-liked economic sector. Workers in the gig economy are defined as “individuals employed or appointed under a Contract for Service merely to work on a specific project or job for the purposes of the principal’s trade or business” by the Malaysia Employment Act of 1955 (Jemon, Saiman, Bebit and Hindia, 2021).

The gig economy ought to be taxed in the same manner as traditional businesses are currently, according to the Organization for Economic Cooperation and Development’s (OECD) 2015 Digital Economy Outlook (Kuek, 2020). A similar remark was made by IRBM, which states that this e-commerce activity falls within Section 4(a) of the Malaysia Income Tax Act, 1967 and is therefore considered a commercial activity (IRBM, 2022). Every prospective taxpayer in the gig economy has an obligation to record any profits or losses from gig business ventures.

The use of “Theory of Planned Behaviour” in the tax compliance context

Theory of Planned Behaviour (TPB) is a social psychological theory that aims to explain human behaviour by considering the beliefs, attitudes, and intentions that shape an individual’s actions. According to the theory, an individual’s behaviour is determined by three main factors: their attitude toward the behaviour, their subjective norms, and their perceived behavioural control (PBC) (Ajzen, 1991). Attitude refers to an individual’s evaluation of the behaviour, including their beliefs about the positive or negative consequences of the behaviour. Subjective norms refer to an individual’s beliefs about the social pressure to engage or not engage in the behaviour, including the perceived expectations of significant others. Perceived

behavioural control refers to an individual’s perceived ability to perform the behaviour, including their beliefs about the availability of resources and the extent of their control over the situation (Alleyne and Harris, 2017).

Tax Compliance

Tax compliance relates to obligations of taxpayers that include registration in the tax system, timely lodgement of tax return, payment of taxes on time, and reporting complete and accurate information (Badara, 2012). The notion of tax compliance as a situation where the taxpayer meets all taxation liabilities. Thus, the taxpayer is abiding taxpayers who obey and fulfil and implement tax obligations in accordance with the provisions of tax legislation (Devano and Rahayu, 2006).

Taxpayer Awareness

Tax awareness was used as attitude component in the TPB framework. It refers to taxpayers’ understanding of tax laws and regulations on the specific tax issues that relate to them with the assumption that higher tax awareness is likely to increase tax compliance (Taing and Chang, 2021). According to Awaluddin and Sulvariany (2017) awareness of taxation is a condition where a person knows, recognizes, respects, obeys the applicable tax provisions seriously, and desires to fulfil his or her tax compliance. Hardiningsih, Januarti, Oktaviani and Srimindarti (2020) asserted that lack of awareness has the potential to reduce tax compliance and when the taxpayers become more aware, they are more likely to follow tax regulations.

Trust in Government

Trust in Government was used as the subjective norm component in the TPB framework. Subjective norm is commonly referred as “the perceived social pressure to perform or not to perform the behaviour” (Ajzen, 1991, p. 188).

Unconditional trust is rare as it is provided to certain individuals and organizations for a given matter across a time frame (Birkyt, 2014). When it comes to tax compliance, taxpayers are aware of their exchange relationship with the government. Torgler (2003) also stated that if the government takes positive actions, taxpayers would establish good views and dedication towards the tax system and tax payment, resulting in increased compliance behaviour. On the contrary, taxpayers' mistrust of government may give a rationale for avoidance (Jimenez and Iyer, 2016).

Tax Socialization

Socialization taxation is an attempt by the Director General of Taxation to provide information, understanding, and guidance to the public, especially taxpayers about taxation and laws (Savitri and Musfialdy, 2016). Wardani and Wati (2022) stated that one of the factors that need to be considered in increasing tax compliance is by disseminating tax regulations through counselling, moral appeal, billboards, and opening tax regulation sites that can be accessed at any time by taxpayers. Gunadi (2010) also asserted that tax socialization is required to expand the number of taxpayers and can lead to increased taxpayer compliance, resulting in increased tax income.

METHODOLOGY

The research is grounded in established theory and adheres to the positivism and empiricism paradigm. It employs primary data to quantitatively investigate four research hypotheses, utilizing a survey method for data collection. To ensure content validity, the questionnaire underwent a pretest with the assistance of language and accounting experts. A pilot test was also conducted to confirm the reliability of the questionnaire instrument. Data were gathered through face-to-face surveys and purposive sampling methods, targeting fifth form secondary

school students. A total of 110 responses were collected. The study focuses on the intention to pursue a career as a professional accountant as the dependent variable, with attitude, influence of parents, influence of family and friends, and perceived behavioral control as independent variables. The analysis commences with descriptive analysis to characterize the respondents, followed by model assessment, correlation ratio measurement, and hypothesis testing results.

FINDINGS AND DISCUSSIONS

Based on the interview conducted, the findings are compressed in order to find summary key words and phrases, without losing its meaning and retaining the interviewees' responses intact as presented in the following Table 1:

Table 1 shows the summary of taxpayers' view on the tax compliance in gig economy

Respondent No	Perception	Variable
RES 1	'Most people that I know are not aware of this.'	Taxpayer Awareness
RES 3	"During this pandemic, so many people are involved in the gig economy to earn extra bucks...unless it's mandatory I don't think anyone will declare because it's their hard earned money"	
RES 9	"interesting...what's the threshold to be reported? Because if the amount is small, people usually will ignore"	
RES 4	"Clearer tax rules would help gig workers like me pay our taxes correctly"	Trust in Government
RES 7	"Transparency in how tax money is used builds trust"	
RES 5	"Tax compliance incentives, like service discounts, could motivate us"	

Respondent No	Perception	Variable
RES 2	"I don't think anyone knows how to even declare this... I remember there this one time I tried looking it up, but I can't find it"	Tax Socialization
RES 6	"We've not been taught on this... we don't even know where to start"	
RES 8	"This is new development... most exposure is needed to comply it correctly"	
RES 10	"I think probably most people would have tried to avoid tax if they know they can get away with it since there's no guidelines"	

According to the findings of the research, participants are often unclear of their tax status and plainly demonstrate a lack of grasp of compliance requirements. According to Razmerita, Kirchner, and Nielsen (2016), various factors impact a person's tax information, including education, media, and information exposure. Frequent changes in tax legislation make it much more difficult for taxpayers to keep up (Loo, 2010). The purpose of socialisation activities is to promote awareness of the importance of taxes as well as to attract new taxpayers. Witono (2016) noted that one of the things that should be addressed in enhancing tax compliance is

communicating tax rules through counselling, moral appeal, billboard media, billboards, and creating tax regulation sites.

CONCLUSIONS

The first objective of this study was to identify the taxpayers' view on tax compliance in the gig economy. The findings suggested that there is lack of tax awareness that taxes should be paid. This study reveals that there is a perception that transactions from gig economy activities are private and not subject to tax, failing to understand the importance of paying tax. Tax awareness is needed by the individual taxpayers to effectively comply with their tax obligations in the gig economy. They also need to be aware of this obligations in order to make informed decisions (Wassermann and Bornman, 2020). The second objective is to identify the measures that government can implement to enhance trust and tax compliance among gig economy workers. Taxpayers indicated that they are more motivated to comply with the tax if tax administration procedures and incentives are clearly conveyed to them. Transparency is also said to be vital to ensure the efficacy of local gig taxpayers.

The third objective of this study is to identify the practical ways of updating with current tax updates. The findings showed that due to insufficient update on current tax information, taxpayers are uncertain on how the transactions need to be reported. To sum up, tax authorities will need to devise appropriate strategies to disseminate current tax information to the taxpayers to foster tax compliance, promote positive taxpayer's attitude towards taxation and consequently increase tax yield through voluntary compliance (Savitri, 2015).

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A BIBLIOMETRIC ANALYSIS: MARKET SUSTAINABILITY FOR SECOND-HAND PRODUCTS

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ABSTRACT

The rising global trend towards sustainable consumption has generated substantial interest in second-hand goods as a potential substitute for traditional purchases. Consequently, this study offers an in-depth bibliometric and literature review examination of academic research on second-hand commodities. The content explored herein is deemed to make a significant scholarly contribution to this area of study. A total of 401 eligible articles, authored between 1974 and 2022, were discovered using the appropriate keywords second-hand, pre-loved, or pre-owned. The bibliometric study reveals a consistent rise in the volume of academic articles concerning second-hand goods since 2019. Notably, the leading institutions producing this literature include Cebu Technological University, the University of Tehran, and the University of Hong Kong. Furthermore, the research uncovered five main subject areas: vintage and nostalgia, sustainability, circular economy, fashion, and sharing economy. Most studies of second-hand products focus on how design can enhance environmental performance. One of the five co-words analysis clusters scrutinises sustainable design users' behavior. This can help scholars in related fields select research partners and directions.

INTRODUCTION

Second-hand products, also known as preowned or second-hand items (D'Adamo et al., 2022; Bock, 2019), refer to products previously owned or used by someone and are subsequently offered for sale or reuse. Compared to purchasing new items, customers have the option to purchase cheaper products from second-hand retailers (Borusiak et al., 2020), which leads to increased consumption of sustainable goods and positive long-term environmental impacts. Bock's (2019) research reveals that buying pre-owned items aids in waste reduction and resource conservation by prolonging the lifespan of goods (Mangilit et al., 2022). First Insight (2000) reported that 62% of Generation Z, who are soon to join the workforce, opt for sustainable brands, matching the level found for millennials. Moreover, a remarkable 73% are willing to pay a premium for eco-friendly products. The study conducted by Kiehn and Vojkovic (2018) found that millennials are motivated to shop for second-hand clothing due to its popularity as a current trend and a sustainable consumption practice. The study conducted by Kiehn and Vojkovic (2018) found that millennials are motivated to shop for second-hand clothing due to its popularity as a current trend and a sustainable consumption practice. The study further reveals that some individuals purchase second-hand clothing to justify their higher consumption of clothing. The primary motive behind this shopping behaviour does not seem to be driven by environmental concerns, as reiterated by Kiehn and Vojkovic. The findings suggest that purchasing second-hand clothing meets the same requirements as fashionable clothes do for millennials.

On the contrary, Chaturvedi, Kulshreshtha, & Tripathi (2020) revealed that generation Z's purchasing intention for recycled clothing is influenced by willingness to pay, environmental concern, perceived value, and personal norms. As a result, the major predictors of recycled clothing purchase intention for future young generations were

willingness to pay, environmental concern, and perceived value.

However, financial challenges also plague the second-hand market (Yrjölä, Hokkanen, & Saarijärvi, 2021). Previous research by Akerlof (1970) suggests that knowledge asymmetry may lead to issues, as the quality and condition of second-hand goods can vary. Consequently, sellers may exploit buyers' struggles in gauging the product's true value by upping prices on inferior products. Belk and Ger (2003) argue that there is a social stigma associated with purchasing second-hand items. While buying second-hand goods became popular before it became fashionable (Kiehn & Vojkovic, 2018), entering thrift stores or second-hand shops was highly stigmatised and considered a sign of being unable to afford new products (Martínez, González, & Barrie, 2022). Furthermore, the goods within these stores were often viewed as dirty due to their previous use. Therefore, individuals may be deterred from purchasing second-hand items due to perceived lower social standing or hygiene concerns (Bosangit, lyanna, & Koenig-Lewis, 2023). The social interactions involved in buying pre-owned goods may become more intricate as these perceptions can vary in diverse cultural contexts and because of economic and social concerns (Thompson, 2018).

The diverse findings in the literature demonstrate the intricacy of purchasing used items. A thorough, structured, and methodical assessment of prior studies is required to establish a coherent knowledge base and locate research deficiencies. Regrettably, despite numerous investigations conducted since 1974, there are no exhaustive and current literature analyses guiding future research on second-hand goods; the available assessments are confined by their limitations.

This methodology aids in identifying key actors, major themes, and publication and citation patterns within the field, allowing for informed decision-making in both research and practice. The objective of this study is to

offer an overview of recent developments in second-hand research. Our research goals encompassed multiple facets.

- RO1.** To explore the publication and citation trend of second-hand product research
- RO2.** To identify the major contributors to second-hand products research.
- RO3.** To highlight the key themes and propose future avenues for second-hand product research.

To achieve these objectives, we begin by carrying out a performance analysis to evaluate the patterns of publication and citation in this subject, considering those of the leading contributors. Subsequently, we use scientific mapping to determine the intellectual organisation of the subject field. Through this procedure, outlined in Table 1, we identify repeated themes and propose potential avenues of investigation for further study in this field.

The outcomes of this review benefit several stakeholders, encompassing new and established academics, professionals, and policymakers, as they offer perspectives on publication and citation trends, significant contributions, and prominent themes in this research area. Additionally, our research adds to the shared comprehension of second-hand goods, whilst also highlighting crucial unexplored areas and future research prospects, making it a valuable resource for stakeholders in this research field.

RESEARCH METHOD

Tranfield et al. (2003) state that the primary objective of conducting a literature review is to meticulously identify, specify, chart, and appraise relevant, existing literature. A literature review can comprehensively integrate various publications and methods using a systematic approach, facilitating a meticulous and profound analysis that scrutinises contextual linkages between the research (Raghuram et al., 2009).

The use of bibliometric analysis in the present study was selected for multiple reasons. Firstly, bibliometric analysis offers a more systematic study of several hundred publications, thus providing a more dependable approach in comparison to other text analysis methods, such as content analysis, when handling a large number of articles. Secondly, it allows for an extensive exploration of the associations between articles, citations, co-citations and keywords, leading to comprehensive and insightful outcomes. Finally, bibliometric analysis allows readers to efficiently identify research interest clusters within a field. Hence, this study employed bibliometric analysis due to its practicality, ability to conduct comprehensive analysis, and provision of clear visual representations of research clusters.

DATA COLLECTION

This study employs a bibliometric approach to review the systematic literature on second-hand products (pre-loved or preowned) in order to examine past research. This paper adheres to conventional structures, including common academic sections and regular author and institution formatting, with factual and unambiguous titles. Grammatical correctness is maintained without any errors in spelling, grammar, or punctuation. The review systematically investigates the literature to answer questions (Dewey & Drahota, 2016), using techniques such as content analysis, bibliometric analysis, meta-analysis, and thematic analysis. The language variant chosen is British English. Objective and value-neutral language is utilised, avoiding biased or emotional language and sticking to common sentence structure and technical terms. Lim, Kumar, and Ali (2022) state that bibliometric analysis employs quantitative and statistical methods to evaluate literature. This methodology is capable of handling extensive sets of literature and reducing biases due to the objective measurement statistics used to analyse it (Mangilit et al., 2022; see Table

Table 1 Review Procedure

SPAR-4-SLR (PRISMA)	Consideration	Decision
Assembling (Identification)	Search Focus	Second-hand markets
	Search keywords	("second-hand" OR "second hand" OR "pre-loved" OR "pre-loved" OR "preowned" OR "pre-owned")
	Search database	Scopus
Arranging (Screening and Eligibility)	Search field	Article title, abstract and keywords
	Search result	9538 articles
	Search period	Up until July 2022
	Subject area	Business Management and Accounting
	Document type	"Article"
	Publication stage	"Final"
	Source type	"Journal"
	Language	"English"
Assessing (Inclusion)	Search Result	410 articles
	Performance Analysis	Publication and citation trends Most impactful articles (citation) Most productive journals (publication) Most productive (publication) impactful (citation)
	Science Mapping	Co-word analysis (major themes) Bibliographic coupling (major themes) Trend analysis (trending themes and topics)

The data collection for this study underwent two stages: assembling (or identification) and arranging (screening and eligibility), as shown in Table 1. During the assembling stage, search keywords depicting preowned products were employed, including "second-hand" or "pre-loved" or "preowned" or "pre-owned". These keywords were identified through literature reviews (Paul et al., 2021). The Scopus database, a vast scientific database system, was utilized to investigate 9538 documents using the search field "Article Title, Abstract, and Keywords".

During the arrangement and screening stage, the search was conducted until the end of July 2022 without a specified start date to gather as many relevant articles as possible. The investigation was focused and limited to subject areas of business management and accounting to ensure relevance. Furthermore, technical abbreviations were explained upon first usage. It is crucial to consider the type of document to include in conceptual and empirical research. Therefore, the article type

was deemed the most appropriate choice because of its rigorous peer review process, unlike editorial and note types. The publication must be in its final stage to ensure replicability, as in-press articles are typically assigned to a later year. The search was restricted to journals as they meet two criteria: (i) the presence of peer review, and (ii) they represent complete research. Research in progress and explanatory works such as conferences and book chapters were not considered. The search was limited to English, which is the authors' proficient language. As a result of the filtering process, a total of 410 documents were obtained, with 9 being excluded; the final number amounted to 401 documents.

The assessment stage was pivotal in accomplishing this analysis. The final stage of data analysis involved assessment, which ultimately led to the completion of performance analysis and science mapping. Firstly, productivity and impact of preloved or preowned luxury products were scrutinised through publication and citation trends during

the performance analysis phase. The study revealed the most impactful articles based on both global and local citations. In addition, it identified the most productive publications and the most impactful contributors, including authors, journals, institutions, and countries. Technical term abbreviations were explained as necessary to enhance the readers' comprehension. The performance evaluation analysis in this study aligns with previous bibliometric reviews (Donthu, Reinartz, Kumar & Pattnaik, 2020) that examine the profiles of contributors commonly present in empirical research. However, the study conducted by Linnenluecke, Marrone, and Singh (2020) delves into the topic more analytically.

Next, this study conducted science mapping, co-word analysis, and bibliographic coupling analysis. The co-word analysis demonstrated the major themes present in the literature through the clustering of frequently occurring keywords. By utilizing two analytical techniques aimed at triangulating the significant themes in the literature (Lim, Kumar, and Ali, 2022), the bibliographic coupling analysis revealed critical themes in the literature through the clustering of articles with standard references (Donthu et al., 2021). Finally, a trend analysis was conducted to map the evolution of the articles and topics relating to pre-loved or preowned luxury products. The results of the bibliometric study are presented in the subsequent sections.

The study analysed 401 publications on second-hand products and yielded two main findings. Firstly, the performance analysis comprised publication and citation trends, as well as the identification of the most impactful articles, productive sources, authors, institutions, and countries.

Next, we conducted a science mapping analysis, which encompassed examining the co-occurrence of the author's keywords, the co-occurrence network of main themes, bibliographic coupling, and trend analysis of popular themes and topics. The study findings are presented below

RESULTS AND DISCUSSION

Performance Analysis

When studying the literature on second-hand marketplaces, analysing publication and citation trends is necessary to gain knowledge of the subject's leading authors, successful academic journals, and important publications. This study provides a summary of previous research, acknowledges significant contributions, and assists in comprehending the current state of the research field (Donthu, Reinartz, Kumar & Pattnaik, 2020).

Publication trend on second-hand product

The data presented in Figure 1 reveals a steady rise in the number of publications about used goods from 1974 to 2022. The number of published articles has been increasing steadily since 1974, with a peak of 54 publications in 2019. Of particular note, over 41.39% (166 out of 401) of the articles were published after 1974, indicating a growing interest in the topic amongst researchers in recent years. This pattern points towards the emergence and increasing significance of the second-hand goods research sector.

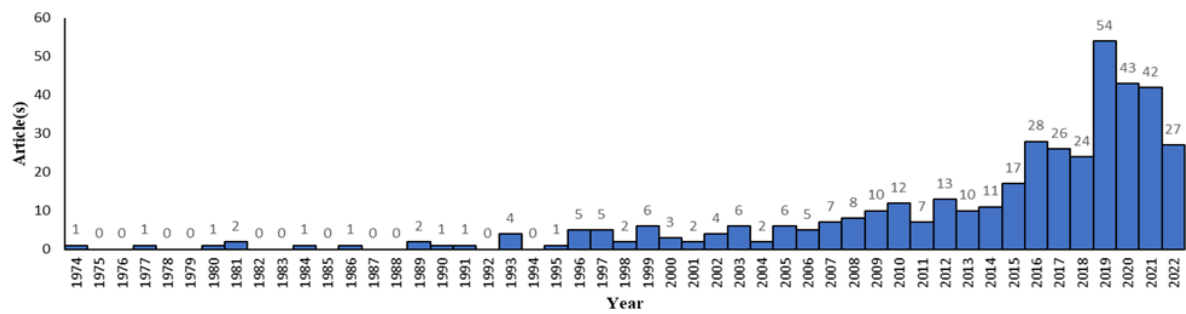
Figure 1 Publication Trends on Second-hand Products

Table 2 exhibits the journals with the most prolific rates when imposing a criterion of five sources for used goods. Six journals accounted for 76 articles, equivalent to approximately 20% of the total 401 publications. The remaining 80% of unprinted works were published in other journals. Around 38.15 percent and 19% of the overall articles in the sample and the top 10 journals, individually, were represented by the 29 articles published in the Journal of Cleaner Production. Notably, a recent study on a specialised VAT regime is discussed in "A New (Circular) Economy: A New Special Arrangement for Second-Hand Goods!" published in Volume 30, Issue 2, 2021. The publication examines the process of returning goods from the consumer to the productive sector.

The article "Towards Building Sustainable Consumption: A Second-Hand Buying Intention," published in a different issue of 2022, indicates a positive correlation between the desire to purchase used goods and the intention to visit second-hand shops. The International Journal of Production Economics ranked first with ten articles, closely followed by the Journal of Business Research with eleven. Business History and the Journal of Fashion Marketing and Management jointly occupied the fourth position, each with nine articles. Technological Forecasting and Social Change ranks fifth with 8 articles. Despite the recent emphasis on various disciplines, the sustainability of used goods remains the primary focus (Mangilit et al., 2022). According to previous studies, the sustainability of second-hand products may need more time

to garner more attention. The significance and necessity of considering sustainable and user-centred design has been adequately emphasised (Hahn & Kühnen, 2013). However, sectors such as operations management and production may require more time to gain the attention of researchers. Hahn and Kühnen (2013) further stress the need for multidisciplinary research due to the unique characteristics of second-hand items.

Table 2 Top 5 prolific sources for second-hand product

Rank	Source	Article(s)
1	Journal of Cleaner Production	29
2	Journal of Business Research	11
3	International Journal of Production Economics	10
=4	Business History	9
=4	Journal of Fashion Marketing and Management	9
5	Technological Forecasting and Social Change	8

Most impactful authors

Table 3 displays the authors with the highest number of citations based on their publication history. The top author with the most citations is Mont O, who has published 2 articles. Mont, alongside Matthias Lehner and Emma Edbring, conducted research to comprehend the factors that influence individuals to engage in unconventional consumption patterns and the obstacles they encounter in doing so. Mont's research aims to objectively investigate consumer sentiments and understand the reasons behind the growing enthusiasm for

alternative consumption practices. These practices encompass various consumption patterns, including sustainable consumerism, second-hand marketplaces, and the sharing economy. To gain more insight into these topics, Mont conducts literature reviews and case analyses as part of their research. The business model design methodology is widely used by top researchers in this field. This framework is effective in analysing the dynamics of alternative consumption models. Table 3 presents the noteworthy contributions of various authors, wherein Mont O dominates in terms of citation count, particularly in exploring alternative consumption models and utilising methods such as literature reviews, case analyses, and business model design. Identifying the most prolific writers may uncover the scholars who have significantly influenced a specific topic or field of study (Seglen, 1997). It may indicate an author's expertise, research output, and influence in the academic sphere. It is imperative to also consider the relevance and significance of their research. It is worth noting that solely measuring productivity may not always reflect the value or quality of an author's contributions.

Table 3 The most impactful authors for second-hand products

Rank	Author	Total Citation(s)	Article(s)
1	Mont O	364	2
2	Burt R.S	251	1
3	Dalhammar C	185	1
3	Jacobsson N	185	1
4	Gullstrand Edbring E	179	1
5	Guiot D	179	2

Most productive and impactful institutions

Table 4 displays the highest publishing organizations that have produced more than

seven articles, alongside their locations and number of publications. Cebu Technological University researchers have published the largest number of papers. This is in comparison to the most cited authors in Table 3. The University of Tehran has produced 13 articles, making it the second most productive institution. The University of Hong Kong and Tsinghua University follows with 11 each. Wang et al. (2019) argue that knowledge of institutional productivity and impact facilitates researchers in identifying potential collaborators, thereby enhancing research quality and visibility. Collaborations with reputable institutions result in higher-quality research outputs and increased research impact.

Additionally, funding agencies and organisations prioritise institutions with an established productivity and impact track record (Adams, 2013). Researchers who are cognisant of these institutions can deliberately pursue alliances or associations that boost their prospects of obtaining funding for their projects.

Researchers can gain insight into their competition and benchmark their own performance by monitoring the productivity and impact of other institutions (Roser et al., 2019). This knowledge enables researchers to identify strong and weak areas in their work, and compare them to those of other institutions.

By identifying the most productive and impactful institutions, researchers can also spot emerging trends and hotspots. This understanding helps researchers to select research directions and topics that are probable to gain attention and have a more extensive impact.

Table 4 The Most Productive and impactful institutions

Ranking	University of Affiliation	Articles
1	Cebu Technology University	19
2	University of Tehran	13
=3	The University of Hong Kong	11
=3	Tsinghua University	11
=4	Monash University	9
=4	Zhejiang University	9
=5	University of Helsinki	8
=5	Zhejiang University of Technology	8
=6	Lappeenranta University of Technology	7
=6	Nanjing University of Aeronautics and Astronautics	7

Science Mapping

Co-occurrence of Authors' Keywords

The co-occurrence network reveals the crucial study themes surrounding second-hand items, presented in Tables 5 and Figure 2-3. All keywords were utilised as the analysis unit in conjunction with co-occurrence as the analysis type. The 20 keywords were categorised into 5 clusters, each representing a distinctive trait that falls under the five key themes: fashion, sustainability, circular economy, vintage, and nostalgia.

We categorise the five clusters based on the articles' content, with a focus on those with high-rank values. Vintage and nostalgia themes are covered by the second-hand, luxury, vintage, and nostalgia labels found in Cluster 1 (Veenstra & Kuipers, 2013; Sarial-Abi, Vohs, Hamilton, & Ulqinaku, 2017). For example, in Figure 5, Waldman (1996) suggested that an exclusive leasing policy could eradicate the second-hand products market (Dindarian et al., 2012). It is reasonable to argue that the current product design and the emerging second-hand market pose the primary obstacles to reuse electrical home appliances, rather than the quality of discarded products or the cost of electrical replacement parts. Brooks (2019), on the other hand, draws a comparison between the life cycles of fast fashion and used clothing. The extant literature has furnished a theoretical base, but there is still more to be

done to develop a lucid conceptual framework of second-hand goods.

Cluster 2, centering on sustainability, has been labelled with three categories: consumers, business model, and sustainability (Goodland, 1995; Constanza & Patten, 1995; Lubin & Esty, 2010). The pieces on every topic offered informative insights into the interplay of sustainability, consumer conduct, and the second-hand trade model. These discoveries may aid forthcoming scholars in scrutinising their research to gain further knowledge on these themes and their contribution to boosting more ecologically-conscious consumer practices.

Cluster 3 covers topics including reuse, remanufacturing, recycling, and circular business models, which offer valuable guidance for companies, decision-makers, and individuals seeking to adopt more sustainable and circular practices (Yuan, Bi & Moriguichi, 2006; Blomsma & Brennan, 2017; Razza, D'Avino, L'Abate, & Lazzeri, 2018). The textile industry has been analysed, and the lessons learned can be translated to other fields.

Cluster 4 focuses on fashion concerning second-hand items, aligning with the cluster's core themes of second-hand markets, consumer behaviour, style, retail, and clothing (Ma, Shi, Chen, & Luo, 2012; Cervellon, Hjerth, Ricard, & Carey 2010; Hur, & Cassidy, 2019).

The researchers have provided useful insights into the opportunities and challenges facing the fashion industry, particularly in light of the growing second-hand market and the trend towards more sustainable and conscientious consumer behaviours. Their studies stressed the importance of prudent fashion consumption decisions and advocated for more environmentally friendly clothing retail practices. This discovery highlights the necessity of additional, comprehensive quantitative investigations.

Comparatively, Cluster 5 is linked to sharing economies, thrift stores, and cooperative consumption (Schor, 2016; Hamari, Sjöklint, & Ukkonen, 2016; Kenney & Zysman, 2016). This group of articles is named the “sharing economy” cluster as they are all concerned with aiding readers’ understanding of the sharing economy, group consumption, and the benefits of thrift store purchasing. The study presents objective evidence supporting the potential for sharing platforms to enhance sustainability, community empowerment, and transform traditional business models. As more technology-related data is gathered, efficient techniques and tools are expected to emerge.

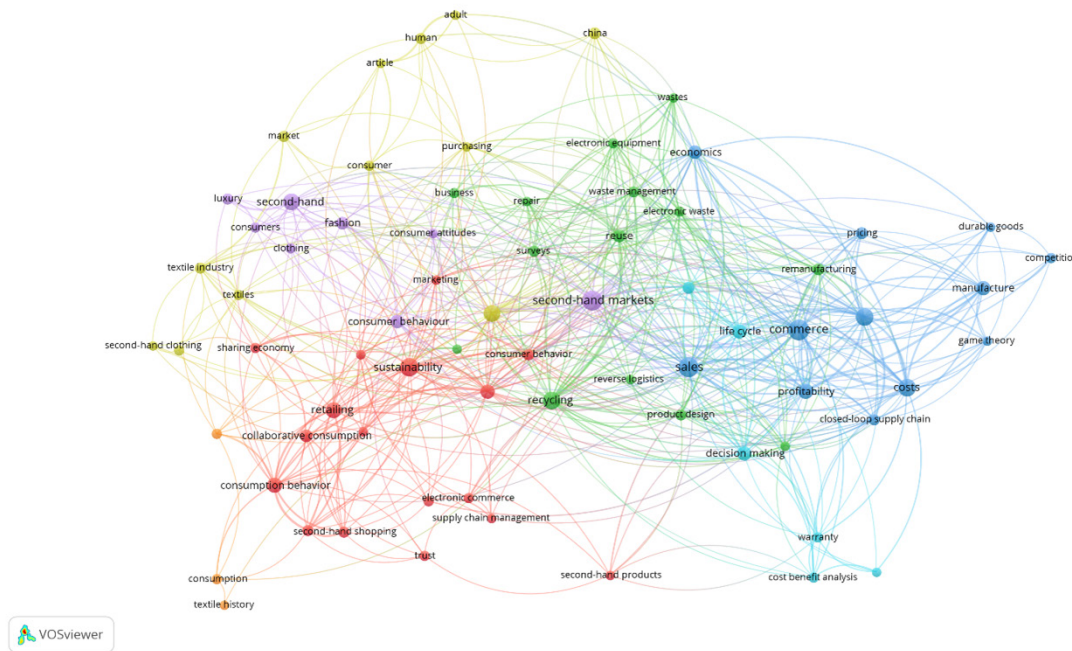
Table 5 Co-occurrence Network of 5 Main Themes on Second-hand Products (Pre-loved or Preowned)

Main Theme	Key Words (Topics)	Cluster
Vintage and Nostalgia	second-hand	1
	luxury	1
	vintage	1
	nostalgia	1
Sustainability	sustainability	2
	consumers	2
	business model	2
Circular Economy	circular economy	3
	reuse	3
	remanufacturing	3
	recycling	3
	circular business models	3
Fashion	second-hand markets	4
	consumer behaviour	4
	fashion	4
	retailing	4
	clothing	4
Sharing Economy	collaborative consumption	5
	second-hand shopping	5
	sharing economy	5

Figure 2 Co-Occurrence Network Map



Caption: Cluster 1 (Red) Cluster 2 (blue) Cluster 3 (Green) Cluster 4 (Purple) Cluster 5 (Orange)

Figure 3 Co-occurrence and Author

CONCLUSION AND IMPLICATIONS

Evaluation of previous research on pre-owned products reveals noteworthy findings and implications. Analysis of the publication dates indicates a growing interest in this field, particularly since 2019. This trend underlines the heightened importance of understanding the subtleties of second-hand goods. Furthermore, the referenced literature offers valuable insights into the impact of these studies. Many of these publications have considerably influenced scholarly and practical dialogues within this domain, underscoring their enduring importance. It is worth noting that research activity has surged since 2019, which could imply the real-world significance and applicability of such research in this field.

Scholarly publications on the trade of second-hand goods span multiple academic journals, showcasing the interdisciplinary nature of this field. The presence of research in economics, business, and policy-making publications suggests that the impact of used goods extends beyond specific disciplines. Such diversity facilitates a comprehensive

academic debate from various perspectives, improving our understanding of these complex phenomena.

The participation of different authors, nations, and institutions reflects the global interest and importance of second-hand product research. Eminent scholars have made a significant contribution to its development. Although academic institutions have largely influenced the shaping of this field, the crucial contribution of international organizations and government bodies highlights its practical and policy implications.

Taken together, our research on the mapping of 5 clusters/themes and their implications contributes to a comprehensive framework that provides a valuable reference point for future studies, management decision-making, and policy formulation in the critical field of international business. Overall, the performance evaluation highlights a dynamic and expanding area of research that generates noteworthy studies on the intricacies of second-hand goods. The variety of contributions from different regions, industries, and entities

emphasises the necessity for a global and cooperative approach.

The bibliometric analysis of second-hand products offers valuable insights into the expanding academic research concerning this subject. Utilising a systematic examination of scholarly publications, this review demonstrates the escalating interest and importance of second-hand products in several domains, including sustainability, consumer behaviour, retail, and the circular economy. The research outlines the linkage between second-hand products and broader concepts of sustainable consumption and resource efficiency, as revealed by the co-occurrence of terms like "sustainability," "reuse," "recycling," "consumer behaviour," and "circular economy." This strong thematic relationship emphasises the interconnectedness of research related to second-hand products. The significance of second-hand products in the context of sustainability and circular economy is highlighted by this review.

The importance of managerial involvement in second-hand shopping is twofold: reducing waste and protecting resources while promoting responsible consumer behaviour. By analysing consumer motivation and perception towards used goods, companies can tailor their strategies to accommodate an informed and environmentally conscious customer base. As global environmental awareness continues to flourish, the significance of embracing second-hand products in addressing overconsumption and waste production escalates. This indicates that increased accessibility and convenience will support the expansion and long-term viability of the second-hand market.

Furthermore, the adoption of bibliometric review in the study showcases the importance of second-hand products in shaping theories related to consumer behaviour and retail practices. This, in turn, facilitates the conceptualization of a circular economy that seeks to minimize waste and maximize resource utilization.

The bibliometric analysis underlines the potential for future research in the second-hand market to promote the circular economy model by extending product lifetimes and decreasing demand for new items. Subsequent studies could investigate upcoming trends, sharing economy innovations, and the influence of digital platforms on second-hand goods accessibility and preference. The bibliometric review of second-hand goods highlights the topic's growing significance in academia and its pertinence to wider debates concerning sustainability, consumer behaviour, and the circular economy. The review provides a valuable basis for researchers, policymakers, and corporations who wish to comprehend and utilise the potential of used goods to promote a sustainable and responsible method of consumption and resource management.

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