



Faculty of Economics and Business

**Understanding the Intention to Consume by the Consumers for MSME
in Malaysia**

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**DOCTOR OF BUSINESS ADMINISTRATION
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Understanding the Intention to Consume by the Consumers for MSME
in Malaysia

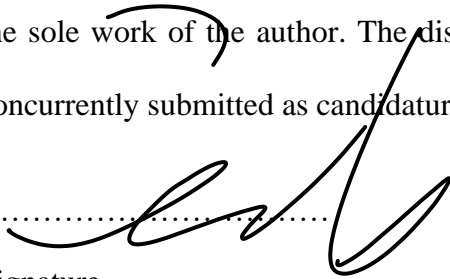
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DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgement has been given, it is the sole work of the author. The dissertation has not been accepted for, and is not being concurrently submitted as candidature for, any other degree.

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ABSTRACT

Micro, small and medium enterprises (MSMEs) make an important contribution to Malaysia's economy. The lack of market strategies is one of the biggest challenges for SMEs that hinders their growth. Private consumption as a measure of consumer spending that covers a multidisciplinary area is critical to economic development. The objective of this study is to investigate the impact of online search data on the estimation of private consumption in Malaysia. A comprehensive approach adopted incorporates both online and conventional models to estimate private consumption. The online search indicator used in the study was constructed from Google Trends data and focuses on product subcategories of the Shopee website in Malaysia. The dataset covers the period from 1 January 2016 to 31 March 2023. This research involves the development of an online search indicator for private consumption using principal component analysis, the construction of conventional leading economic indicators, and the estimation of online and conventional models for private consumption. The results of the variance decompositions suggest that the online model of private consumption could serve as a viable alternative or complement to the conventional model of private consumption. Looking ahead, this study envisages further exploration of search indicators for predicting private consumption, including multimodal models as data accumulation continues to increase.

Keywords: Google Trends, Private Consumption, Online Search, Malaysia

***Mentafsir Hasrat Pengguna dalam Pasaran MSME Malaysia:
Satu Analisis Komprehensif***

ABSTRAK

Perusahaan mikro, kecil dan sederhana memberi sumbangan penting kepada ekonomi Malaysia. Kekurangan strategi pasaran adalah salah satu cabaran terbesar bagi PKS dan menghalang pertumbuhan mereka. Penggunaan swasta sebagai ukuran perbelanjaan pengguna, kawasan pelbagai disiplin, adalah penting untuk pembangunan ekonomi. Objektif kajian ini adalah untuk menyiasat kesan data carian dalam talian terhadap anggaran penggunaan swasta di Malaysia. Pendekatan komprehensif diguna pakai yang menggabungkan kedua-dua model dalam talian dan konvensional untuk menganggarkan penggunaan swasta. Penunjuk carian dalam talian yang digunakan dalam kajian ini dibina daripada data Google Trends dan memfokuskan pada subkategori produk laman web Shopee di Malaysia. Set data meliputi tempoh dari 1 Januari 2016 hingga 31 Mac 2023. Penyelidikan ini melibatkan pembangunan penunjuk carian dalam talian untuk penggunaan swasta menggunakan analisis komponen utama, pembinaan penunjuk ekonomi utama konvensional dan anggaran model dalam talian dan konvensional untuk penggunaan swasta. Keputusan penguraian varians mencadangkan bahawa model penggunaan swasta dalam talian boleh berfungsi sebagai alternatif yang berdaya maju atau pelengkap kepada model penggunaan swasta konvensional. Memandang ke hadapan, kajian ini membayangkan penerokaan lanjut penunjuk carian untuk meramalkan penggunaan swasta, mungkin termasuk model multimodal apabila pengumpulan data terus meningkat.

Kata kunci: Google Trends, Penggunaan swasta, Pencarian dalam talian, Malaysia

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIDA	Attention, Interest, Desire and Action
AR	Autoregressive
BEA	Bureau of Economic Analysis
BNM	Bank Negara Malaysia
BVAR	Bayesian Vector Autoregressive
COICOP	Classification of Individual Consumption Purposes
DFGLS	Dickey-Fuller Generalised Least Squares
DOSM	Department of Statistics, Malaysia
ECM	Error Correction Model
ECT	Error Correction Term
GDP	Gross Domestic Product
ICT	Information and Communications Technology
KMO	Kaiser-Meyer-Olkin
MIER	Malaysian Institute of Economic Research
MSME	Micro, Small and Medium-sized Enterprise
NESDC	National Entrepreneur and SME Development Council
PCA	Principal Component Analysis

SVI	Search Volume Index
VAR	Vector Autoregressive
VECM	Vector Error Correction Model

CHAPTER 1

INTRODUCTION

1.1 Study Background

Malaysia is classified as an emerging market (International Monetary Fund, 2022, October; World Bank, 2021), and a country that is developing its economy and financial markets to a higher level. Malaysia has experienced considerable economic growth in recent decades (World Bank, 2022, November 29) and has made significant progress in developing its markets (Koen et al., 2017). However, Malaysia still faces challenges such as income inequality and political stability, which are typical characteristics of emerging economies.

Despite these challenges, small and medium-sized enterprises (SMEs) in Malaysia play a crucial role in the country's economy: They account for 97.4% of all enterprises and contribute 37.4% of Malaysia's GDP in 2021 (SME Corp., 2022), as reported by the National Entrepreneur and SME Development Council (NESDC) in MSME insights 2021. In addition, SMEs employ almost half (47.8%) of the country's workforce (SME Corp., 2022), highlighting their importance in economic growth and job creation.

However, MSMEs in Malaysia face a number of challenges and issues that can limit their growth and competitiveness. These include limited access to markets, finance, technology and innovation, human resource bottlenecks, limited management and technical skills, and regulatory barriers (Mohamad et al., 2021; Rahman et al., 2016; Tehseen, 2014). One of the biggest challenges for MSMEs in Malaysia is the lack of market knowledge

(Mohamad et al., 2021), which if sufficient, would help reduce uncertainty and support decision-making at all levels.

Market research enables businesses to better understand consumer behaviour, identify emerging trends, and develop effective marketing strategies; forecasting private consumption can also inform market research as it can help solve a range of economic and business problems, provide insights into consumer behaviour, reduce uncertainty and support decision-making at all levels. Private consumption forecasting is a multidisciplinary field that includes elements of economics, statistics, and data science.

Private consumption is an important element of GDP expenditure and acts as a key driver of the country's economic development that sustains the steady growth of the macroeconomy, which is of great importance for forecasting research. It is evident in 2022, when private consumption accounted for 56.7% (CEIC Data, 2023) of total expenditure in Malaysia.

Economists usually develop models to analyse and predict private consumption, drawing on theoretical foundations. They also use data on macroeconomic indicators such as GDP, inflation, and interest rates to make forecasts. Statisticians play a key role in developing and estimating models for forecasting private consumption, including time series models, structural models, and econometric models. They also use statistical techniques to assess the accuracy and reliability of forecasts. Data scientists apply machine learning algorithms to analyse large data sets, including big data sources such as social media, search engine queries, and transactional data, to improve the accuracy of private consumption forecasts.

Predicting private consumption in emerging economies is particularly challenging due to factors such as limited data, high volatility, and structural changes. There is motivation to explore the use of alternative data sources to overcome these challenges. The increasing amount of time Malaysians spend online and their preferences for certain Internet activities have made the Internet a valuable source for data mining. The Digital 2023 Global Overview Report (DataReportal, 2023a), published in collaboration with “We Are Social and Hootsuite”, reports that Malaysians spend an average of 8 hours and 6 minutes online per day, ranking 8th among countries with the highest online time. The 2021 Survey Report on ICT Use and Access by Individuals and Households, conducted by the Department of Statistics Malaysia (2023, May 31), showed that the top three activities in Internet use in 2021 were participating in social networking; downloading pictures, movies, videos or music; playing or downloading games; and searching for information on goods or services. In addition, the most common reason for using the Internet in Malaysia was to search for information, which 76.2% of users engaged in (DataReportal, 2023b). Google.com was the most visited website in Malaysia in February 2023, according to Semrush rankings, with nearly 1.3 billion monthly visits (2023), making Google Trends an accessible source of online search data. These findings suggest that online search data offers new opportunities for economic forecasting. By analysing the search terms used by consumers, it is possible to determine which products or services are in demand, and which can help businesses and policymakers to make informed decisions about production, marketing, and distribution. In addition, the use of online search data can help identify emerging trends in consumer behaviour, which can be used to anticipate changes in the market and adjust strategies accordingly.

As technology has advanced, people's lives have become increasingly intertwined with the Internet, leading to significant changes in the way people communicate and consume goods. This has led to the emergence of large amounts of online search data that can be used to predict private consumption. By analysing consumers' search behaviour in conjunction with their usage habits, attention generation will drive their search power and then potentially impact purchasing power. Insights into the factors that influence their purchasing decisions are gained through the AIDA (Attention, Interest, Desire, and Action) model; these are the basic stages that a consumer goes through when making a purchasing decision.

Decision models are frameworks that help explain how consumers make decisions, and they are often used in marketing research to develop more effective marketing strategies. The concept of decision models is also closely related to the theory of attention economics. Attention Economics Theory states that in a world where attention is a scarce resource, businesses and marketers must compete for consumer attention in order to be successful. Overall, Attention Economics Theory and decision models provide a framework for understanding how companies can compete for consumer attention in today's competitive markets. The integration of the AIDA model and the theory of attention economics can lead to the development of more comprehensive and accurate models for predicting private consumption, which can improve decision-making in various fields such as retail, advertising, and marketing.

1.2 Problem Statement

The challenges faced by MSMEs in achieving growth have long been an ongoing issue in Malaysia. In a study by Ambad et al (2020), based on interviews with business founders, marketing strategies are cited as one of the main obstacles to business growth in the country. Although MSMEs make up a significant 78.7% (SME Corp., 2022) of the total number of businesses, they often underestimate or overlook the strategic value of formal market research (Fuellhart & Glasmeier, 2003; Hutchinson et al., 2009; Lybaert, 1998; O'Donnell, 2011), relying instead on interpersonal relationships (Jocumsen, 2004). However, understanding customer demand is critical to gaining a competitive advantage and ensuring long-term sustainability. By utilising market research, MSMEs can improve their profitability, sustainability, and growth prospects. In addition, by acquiring comprehensive consumer data, MSMEs can tailor their products to the specific needs of customers, thereby aligning their marketing strategies with the company's growth objectives.

Standard official data are characterised by a slow flow of information and long publication times. Statistics on economic growth are usually published monthly or quarterly with a considerable delay. The standard forecasting approach involves waiting for all economic indicators to be collected, which can be time-consuming and limits the ability to make informed decisions in the short term. Furthermore, the use of lagged indicators can reduce the effectiveness of forecasts (Matsumoto et al., 2013) and influence the decisions of policy makers (Mustapa et al., 2019). Therefore, there is an urgent need for alternative data sources that can complement official published data for market research and provide a more up-to-date snapshot of the economic landscape.

Google Trends provides access to valuable Google search data that is used for forecasting purposes in various fields. These applications include predicting the outcome of political investigations (Mavragani & Tsagarakis, 2016), improving the forecasting of tourist flows and demand (Artola et al., 2015; Bangwayo-Skeete & Skeete, 2015; Choi & Varian, 2012; Jun et al., 2018), analysing the unemployment-related variables (Askitas & Zimmermann, 2009; Fondeur & Karamé, 2013; Vicente et al., 2015), assessing stock market investors' attention and trading decisions (Da et al., 2011; Moat et al., 2014; Preis et al., 2013), and examining the impact of the COVID-19 crisis (Costola et al., 2021; Shear et al., 2021) and private consumption (Kholodilin et al., 2010; Matsumoto et al., 2013; Vosen & Schmidt, 2011, 2012). Using these resources, MSMEs can better plan their marketing campaigns and focus on reaching their target audience efficiently.

These studies have been conducted in several advanced countries, including the United States (Kholodilin et al., 2010), the Netherlands (Veldhuizen et al., 2016), the Eurozone (Anttonen, 2018), Germany (Götz & Knetsch, 2019), and several countries such as Australia, Canada, the United Kingdom, and the United States (Perlin et al., 2017). However, there is limited research on the application of Google Trends data to understand and explore private consumption in the context of Malaysia, which is known as a multiracial country and an emerging market in Southeast Asia. Therefore, it is interesting to explore the use of online search data as an additional analytical indicator for forecasting private consumption in Malaysia.

1.3 Research Questions

Private consumption plays a crucial role in reflecting the buying habits and purchasing power of individuals (European Central Bank, 2018), making them an important customer base for SMEs. Consumer private consumption studies are crucial for retailers as they help them understand the needs, preferences, and attitudes of their customers (European Central Bank, 2018). By analysing consumer behaviour, retailers can identify trends and patterns that are useful for them to make informed decisions on product development, pricing, marketing, and other aspects of their business. This information can also help retailers tailor their offerings to the specific needs of different customer segments, which can lead to higher customer satisfaction and loyalty.

Overall, consumer research is an important tool for retailers who want to remain competitive in today's fast-paced retail environment. By understanding the needs and preferences of their customers, retailers can develop products and services that fulfil these needs, build strong relationships with their customers, and ultimately drive growth and profitability.

In the digital age, the emergence of new data sources has opened up new possibilities for estimating private consumption, making online search data particularly interesting for deciphering consumer behaviour in the field of marketing research. The aim of this study is therefore to investigate the impact of the inclusion of online search data on the estimation of private consumption. A comprehensive approach taken includes various empirical tests to assess the impact of both online and conventional models of private consumption. Particular attention is paid to explaining the estimation process of the private consumption model

involving online search data, with a focus on the Malaysian context. The specific research questions guiding this study are outlined below:

- i. What are the components of online search indicators? A major focus of this study is to identify and characterise the elements that make up online search indicators. In combination with conventional economic indicators, online search data can serve as a basic element for estimating private consumption.
- ii. What are the elements that make up conventional economic indicators? To ensure the effective use of private consumption estimates in the present and foreseeable future in Malaysia, the careful selection of leading economic indicators is of paramount importance. This question aims to identify and extract the components of conventional economic indicators that have the greatest impact on the accuracy of private consumption estimates.
- iii. Can the online model of private consumption serve as a viable alternative to conventional models for estimating private consumption? The objective is to explore the implications of the online private consumption model and the conventional private consumption model and to highlight their respective effectiveness and applicability in the Malaysian context.

1.4 Objectives

In addition to traditional methods of estimating private consumption, this study aims to use time series data of online search activities to complement the estimation of private

consumption. By incorporating the Consumer Confidence Sentiment Index to measure consumers' current market perceptions, the potential of online search data as a viable alternative for estimating private consumption is compared and evaluated. To achieve the main objective, the following specific objectives were set:

- i. To extract an online search indicator for private consumption using principal component analysis. This process involves the collection and analysis of consumer attention and search patterns on Google. The data will be extracted from Google Trends and processed to construct an online search indicator that effectively reflects consumer interest and behaviour in relation to private consumption.
- ii. To extract conventional economic indicators for private consumption through principal component analysis. Official data from reputable sources such as BNM, DOSM, CEICdata, and MIER are collected to identify key indicators for inclusion.
- iii. To estimate an online model of private consumption using online search indicators and a conventional model of private consumption based on established economic indicators. In both models, the Consumer Confidence Sentiments Index and macroeconomic variables such as gross domestic product and private consumption indicators were added. Various empirical tests, including unit root tests, cointegration tests, and vector error correction models, are used for a comprehensive analysis.

1.5 Significance of the Study

Private consumption forecasting plays a crucial role for various stakeholders such as businesses and governments as it provides valuable insights into the economy, consumer behaviour, and market trends.

For businesses, accurate forecasts of consumer spending can help with business planning as they can anticipate demand for their products or services. By analysing online search data, insights can be gained into the topics and products that attract consumer attention, which can influence marketing strategies and help businesses stay competitive. It can also help make informed decisions about investments in production, marketing and sales, and help investors predict market trends and make informed investment decisions.

For the government, private consumption is a crucial component of GDP, and therefore, accurate forecasts of consumer spending are important for economic policymakers. They can help identify various measures to boost the performance of MSMEs, including improving the institutional support system, facilitating access to finance, enhancing technological capabilities, improving market access, encouraging greater use of ICT, and raising awareness of product labelling and intellectual property rights protection.

The government can also take various measures to stimulate consumer spending. In 2021, for example, the government introduced the National Economic Recovery Plan (PENJANA) to stimulate the economy and support businesses and households affected by the COVID-19 pandemic. The plan includes measures such as cash gifts, tax incentives and discounts on the purchase of cars, houses, and other goods and services.

Overall, private consumption forecasting is crucial for businesses and policy makers as it helps in making informed decisions based on expected trends in consumer spending.

1.6 Scope of the Study

The main objective of this study is to investigate the potential of online search data as an alternative data source for predicting private consumption in addition to conventional economic indicators and to compare their effectiveness. Predicting private consumption is a critical aspect of economic forecasting as it has a significant impact on consumer behaviour and overall economic growth.

The data source is online search data that comes from the Google search engine, which records all searches conducted by online users. The Google search engine is the most popular search engine in Malaysia. Search data or keywords can be used to identify trends in consumer behaviour as it provides insight into what people are interested in and what they are looking for.

In the context of online search data, attention is important as users must first search for a specific keyword before they can access the information they are interested in. Therefore, this study used the AIDA model and the theory of attention economics to gain insights into the components that influence consumers' purchase decisions. The AIDA model provides a deeper understanding of consumer behaviour in predicting private consumption, which can support the development of more effective marketing strategies; while the Attention Economy Theory can provide insight into how online search data can be used to