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Comprehensive E-Portfolio: Changemakers and the Application of a Research Mindset

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Task 1: Problem Outline in a Local Commercial Environment

The transition towards an entirely digital economy in Malaysia has been significantly expedited in recent years; however, there is still a noticeable divide in technology across different commercial sectors. A localized problem related to this divide is the reluctance of micro-enterprises operating within the food and beverage sector in Kampung Baru, Kuala Lumpur to adopt digital payments (specifically interoperable e-wallet systems like DuitNow QR) and the lack of infrastructure to support their adoption.

Despite national data from Bank Negara Malaysia showing that the number of electronic payment transactions increased by 25% to 18.4 billion in 2025 and that DuitNow QR transactions doubled to three billion (Bank Negara Malaysia, 2026), observations of the Kampung Baru culinary scene indicate a very different scenario. Kampung Baru is home to thousands of micro and small home-style food stalls, all of which continue to predominantly use cash-based transactions (Affan & Widyastuti, 2022). The central issue is how the rapid acceleration of national digitalization initiatives contrasts with the on-the-ground conditions of micro-vendors, who have various social-economic and technical limitations that prevent them from fully engaging with the digital ecosystem. Micro-enterprises within the services sector in Malaysia are classified by SME Corp Malaysia as enterprises that generate less than RM300,000 annually or have fewer than five full-time employees (SME Corp Malaysia, 2024). Cash remains the preferred method of payment for these types of businesses because it provides instant gratification and has historically had no transaction processing costs (Fidow et al., 2022).

While Bank Negara Malaysia and the Payments Network Malaysia (PayNet) implemented measures such as waiving the merchant discount rate (MDR) for micro and small businesses using DuitNow QR to promote its use (Bank Negara Malaysia, 2023), micro-vendor resistance to DuitNow QR stems from persistent psychological barriers, lack of digital financial literacy, and mistrust of data security (Chong et al., 2022; Affan & Widyastuti, 2022).

Additionally, regulatory changes under the Interoperable Fund Transfer Framework (IFTF) will mandate the elimination of proprietary, closed-loop QR payment networks by June 2028 in favor of a single shared network, creating additional regulatory pressures for these traditional vendors to adjust their business models (Bank Negara Malaysia, 2026). The problem affects individual business owners through reducing their operational efficiency, hindering their ability to establish auditable digital credit histories necessary for obtaining formal financing, and ultimately jeopardizing their long-term viability (Affan &

Widyastuti, 2022; Department of Statistics Malaysia, 2024). Financial institutions rely increasingly on digital transaction data to evaluate credit risk.

Therefore, cash-reliant micro-enterprises are systematically excluded from accessing formal credit, thereby limiting their potential for growth or recovery from crises (Department of Statistics Malaysia, 2024). Younger generations, including Generation Z, who overwhelmingly prefer cashless transactions and consider digital wallets as essential tools, face inconvenience when merchants cannot accept digital payments (Jamaludin et al., 2024; Che Nawi et al., 2022). From a broader perspective, the slow adoption of digital technologies by micro-enterprises negatively impacts the inclusive economic objectives outlined in the Malaysia Digital Economy Blueprint (MyDIGITAL). One key objective of MyDIGITAL is to include 875,000 micro, small, and medium-sized enterprises in the digital e-commerce economy by 2025 (Economic Planning Unit, 2021). According to the Department of Statistics Malaysia, while Malaysia has high rates of internet penetration, only a small percentage of micro-enterprises utilize advanced digital tools for business operations (Department of Statistics Malaysia, 2024). Consequently, identifying the cognitive, structural, and environmental factors contributing to this resistance in a localized, traditional market environment is crucial for developing effective strategies to address the digital divide.

Task 2: Literature Exploration Using Generative Artificial Intelligence

A generative AI service was used to research recent scholarly articles, identify key vocabulary and foundational principles as they relate to the problem of digital payment resistance by micro-businesses and to establish a theoretical basis for understanding the issue. The process included developing an iterative sequence of prompts to generate evidence-based scholarly models that can be applied to the Malaysian environment. The generative model received the following prompt: “Act as a senior academic researcher who studies Information Systems and the Digital Economy. Use your knowledge to study the latest research regarding the obstacles that prevent micro-businesses from adopting digital payment methods (such as e-wallets) in emerging markets, with particular attention paid to the Malaysian food and beverage sector. Determine the primary theoretical frameworks, critical vocabulary and empirical data which explain why people resist technology. Identify the most reliable results which illustrate what constitutes this problem. Create a synthesized definition of the problem from those scholarly models.”

The academic literature regarding digital payment adoption in micro, small, and medium enterprises relies heavily on the Technology Acceptance Model, originally developed by Fred Davis in 1989. This foundational information systems theory posits that user acceptance of any new technology is fundamentally determined by two primary cognitive constructs: Perceived Usefulness and Perceived Ease of Use. Perceived Usefulness refers to the degree to which an individual believes that utilizing a specific system will enhance their job performance or operational efficiency. Concurrently, Perceived Ease of Use represents the degree to which the individual believes using the system will be entirely free of physical and mental effort. In the context of Malaysian micro-enterprises, empirical findings consistently demonstrate that when digital platforms are perceived as complex or technically demanding, adoption rates plummet, effectively overriding the potential long-term benefits of operational efficiency. Furthermore, the Technology-Organization-Environment framework is frequently utilized alongside the Technology Acceptance Model to explain how external environmental pressures, such as government regulatory frameworks and competitive industry dynamics, interact with internal organizational readiness to influence digital transformation. Studies leveraging these frameworks indicate that a lack of digital literacy, acute fears concerning data privacy, and the perceived financial burden of transaction fees act as primary inhibitors. Synthesizing these theoretical concepts, the core problem can be defined as a multifaceted adoption deficit. Micro-enterprises exhibit profound behavioral resistance to interoperable digital payment infrastructures due to low perceived ease of use, exaggerated risk perceptions regarding financial security, and insufficient organizational readiness, despite the presence of macro-level

regulatory incentives designed to lower the barriers to entry.

The outputs from the artificial intelligence were included as they were able to identify the two most widely accepted and empirically supported theoretical frameworks used in today's IS research. These two frameworks include: 1. The Technology Acceptance Model (Davis, 1989) which can be used to investigate technological resistance at the individual vendor's psychological level and; 2. The Technology-Organization-Environment framework (Tornatzky & Fleischer, 1990) which can be used to investigate technological resistance at the organizational level. The artificial intelligence also accurately depicted how perceived complexity and fear of security issues can overcome the real, economic benefits of digital systems (Affan & Widyastuti, 2022; Fidow et al., 2022).

Additionally, all of the concepts provided by the generative model were verified through cross-referencing against established academic databases and local policy documents to ensure that no "artificial intelligence hallucinations" or false academic references were generated. The importance of Perceived Ease of Use is consistent with existing research on Malaysian enterprise digital marketing and e-wallet adoption (Mohd Nordin et al., 2023; Teo et al., 2020). The academic foundation for the outputs produced by the artificial intelligence is supported by the ten verified academic/institutional sources listed in the table below.

Author(s) & Year	Title of Publication	Relevance to Problem Definition and Context
Davis, F. D. (1989)	Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology	Establishes the fundamental constructs of the Technology Acceptance Model (TAM) that provide a theoretical basis for measuring users' intentions to behave in certain ways towards newly developed digital systems.
Tornatzky, L. G., & Fleischer,	The Processes of	Provides a fundamental

M. (1990)	Technological Innovation	Technology-Organization-Environment framework which will be used to understand how external regulatory and competitive pressures affect the rate of adoption.
Bank Negara Malaysia (2026)	Annual Report 2025: Promoting Safe and Efficient Payment Services	Provides empirical, macroeconomic data on the total number of transactions made using DuitNow QR to illustrate the national movement toward digital payments that are interoperable.
SME Corp Malaysia (2024)	Guideline on New SME Definition	Delivers an official regulatory definition of what constitutes a micro-enterprise; this is provided through both the sales revenue and employee count of a business so as to establish clear boundaries for the research sample.
Department of Statistics Malaysia (2024)	Malaysia Digital Economy 2024	Offers important macroeconomic statistics concerning the extent to which e-commerce, digital infrastructure, and various forms of digital payment have been utilized throughout

		Malaysia's economy.
Economic Planning Unit (2021)	Malaysia Digital Economy Blueprint (MyDIGITAL)	Outlines the national strategic goals for the digital transformation of micro-enterprises including the goal of having 875,000 businesses utilizing e-commerce.
Yang, L. C., & Ming, C. W. (2024)	Digital Transformation and its Effects on the Financial Performance of Malaysian SMEs	Specific financial limitations, digital skills deficiency and infrastructure challenges are identified as barriers to the adoption of technology in the operations of Malaysian SMEs.
Bank Negara Malaysia (2026)	Interoperable Fund Transfer Framework	Regulatory requirements for an end to proprietary QR payment platforms by 2028 creates a sense of urgency for vendors to adapt.
Alalwan, A. A., et al. (2018)	Digital Marketing Adoption in SMEs	The perceived complexity of digital tools is also seen as a barrier for many traditional businesses, creating support for the ease-of-use concept.
Teo, A. C., et al. (2020)	Factors Influencing the Adoption of E-Wallet	Localised empirical data shows that perceived social

		impact, perceived security, and ease of use all contribute to driving e-Wallet adoption in Malaysia.
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Task 3: Research Question and Methodological Approach Formulation

After I had established a clear and well-defined statement of the problem, I used AI (artificial intelligence) to help me write a research question that would be very precise and relevant to the topic; and also to develop a reasonable method for studying the problem. I wanted to create research guidelines that would meet the standards of academic rigor, relate directly to the body of knowledge about our topic, and be practical enough to use while still considering where we could collect data and what types of resources I would have at hand. I gave the generative model some very specific instructions: “Write a clearly stated, measurable research question based on the previously defined problem regarding the reluctance of food and beverage small businesses in Kampung Baru to accept interoperable QR payment systems. Then describe how you plan to study the problem. Include the research philosophy, data collection methods, and sampling strategy that would be most appropriate for an undergraduate researcher working under time and resource limitations. You need to incorporate the Technology Acceptance Model into your study design and include descriptions of two ways to validate your data statistically (Cronbach's alpha and Structural Equation Modeling).”

The primary research question proposed for this investigation is: How do perceived technological complexity and apprehensions regarding transaction security influence the behavioral intention of micro-enterprise operators in Kampung Baru to adopt the DuitNow QR interoperable payment system? To effectively investigate this phenomenon, a quantitative, deductive research approach grounded in a positivist philosophy is highly recommended. The study should utilize a cross-sectional survey design, employing a structured questionnaire explicitly based on the Technology Acceptance Model to measure variables such as Perceived Usefulness, Perceived Ease of Use, and Perceived Risk. Data collection should be executed through self-administered physical questionnaires utilizing a standardized five-point Likert scale, distributed directly to the operators of food and beverage stalls within the targeted district. A convenience sampling technique, supplemented by snowball sampling, is deemed the most realistic strategy. This approach allows the researcher to leverage local community networks to overcome the inherent distrust or severe time constraints frequently exhibited by micro-vendors operating in high-traffic informal markets. This methodological approach ensures the collection of standardized, quantifiable data that can be analyzed using Partial Least Squares Structural Equation Modeling to identify the strength and significance of the relationships between the technology acceptance constructs and actual adoption behaviors. Furthermore, the reliability of the instrument will be verified using Cronbach's alpha, ensuring that all theoretical constructs meet the minimum acceptable threshold of 0.70.

The generated research question was chosen for several reasons: It clearly identified specific and measurable independent variables—the level of technological complexity and levels of security concern—and directly linked those variables to the dependent variable—behavioral intentions. The phrasing of the research question was carefully developed to make sure that the DuitNow QR framework was specifically referred to, thereby linking the academic inquiry to the current interoperability mandate issued by Bank Negara Malaysia to integrate the payment system. The focus on micro-enterprises within a specific geographic area allowed the researcher to avoid making overly broad statements and kept the question very specific and measurable. Focusing on this group is important because although national level macroeconomic reporting indicates a large amount of digital payment adoption throughout the country (Bank Negara Malaysia, 2026), these reports tend to mask localized resistance to digital payments in areas where there is a strong emphasis on cash transactions and where informal commerce is common (Affan & Widyastuti, 2022). To refine the research question further, the researcher made sure that the subjective cognitive barriers identified could be mapped accurately to the constructs defined by Fred Davis in 1989 (Davis, 1989). The quantitative research approach was justified on the basis that it is feasible and consistent with the accepted practices of information systems research. The positivist philosophy and the deductive approach enable the researcher to test existing theories and not develop new ones from scratch. Developing new theories would be too ambitious for the scope of a typical academic study. There is substantial support in previous studies for the use of a structured questionnaire with a five-point Likert scale. This method has been shown repeatedly to be valid for measuring subjective cognitive constructs such as perceived ease of use and perceived usefulness in many different groups (Davis, 1989; Phuong et al., 2020).

Although convenience sampling limits the ability of the researcher to generalize nationally, it is the most practical and reasonable alternative for a researcher seeking to obtain primary data from busy street food vendors who are likely unreachable through formal digital channels or official registries. The proposed method provides a nice balance between theoretical rigor—using advanced methods like Partial Least Squares Structural Equation Modeling (Tornatzky & Fleischer, 1990; Al-Sharif & Al-Ansi, 2024)—and the practical challenges of performing field research in a busy urban setting.

Task 4: Summary Research Proposal

Research Question

What is the impact of perceived technological complexity and apprehension for transaction security on the behavioral intention of micro-enterprise owners to adopt an interoperable DuitNow QR Payment System in Kampung Baru?

Definition of Key Terms

The concept of "Micro-enterprise" is determined based upon the strict regulatory criteria developed by SME Corp Malaysia; these criteria classify businesses in the service and other sectors as micro when their annual turnover is less than RM300,000 or they have less than five full time employees (SME Corp Malaysia, 2024). A specific type of "Interoperable Payment System" is referred to as the DuitNow QR National Standard operated by Payments Network Malaysia (PayNet). This system allows a single Quick Response Code to receive funds from multiple participating banks and e-wallet applications and serves as the primary component of the Central Bank's Interoperable Fund Transfer Framework (Bank Negara Malaysia, 2026). In accordance with the foundational Technology Acceptance Model, "Perceived Ease-Of-Use" is defined as the extent to which an individual perceives that using a specific information system will require no physical or mental exertion (Davis, 1989). "Perceived Security Risk" refers to the subjective probability that an individual may experience loss due to hidden transaction fees or data privacy issues resulting from the use of digital transaction systems (Chong et al., 2022; Fidow et al., 2022). "Behavioral Intention" is a measurable indicator of an individual's likelihood or subjective probability that an individual will perform a certain behavior, particularly the ongoing use of the digital payment platform in their day-to-day business operations (Davis, 1989; Hsieh et al., 2022).

Explanation and Justification of Terminology

The specific language used in the Research Questions and the deliberate choice of these critical terms are intended to provide a clear and precise anchor for the research study within both an academic framework and current Malaysian regulatory context. By using the Official SME Corp Malaysia definition of SMEs, we ensure that the population targeted for our research will be accurately defined and that the results of the research will have direct policy implications for government-assisted support organizations. Additionally, by focusing on the "DuitNow QR Interoperable Payment System", we are able to investigate why there may be resistance to using this common infrastructure. This is important as Bank Negara Malaysia is currently requiring all closed-loop, proprietary QR systems to be eliminated by 2028 (Bank

Negara Malaysia, 2026). As such, studying the reasons behind resistance to adopting DuitNow QR provides us with very useful data on what needs to occur to support a viable national digital economy in the long term.

Lastly, by incorporating "Perceived Ease of Use", we are able to draw upon many years of valid information systems research (Davis, 1989), and by including "Transaction Security", we can address some of the most common concerns expressed by cash-based business owners operating in informal markets (Affan & Widyastuti, 2022).

Proposed Research Design

The research design will be descriptive-explanatory (quantitative), and it will function within a positivist epistemology. A descriptive-explanatory research design provides an excellent means by which to examine how independent variables (i.e., different cognitive perceptions of technology) influence dependent variables (i.e., intentions to engage in specific behaviors). The theoretical framework will use an extended version of the Technology Acceptance Model that includes perceived risk and trust as two new external variables affecting the core cognitive constructs. Structured questionnaires administered directly to survey participants will serve as the main tool for collecting primary data. Cross-sectional data collection allows for quick and efficient gathering of data from survey participants at one point in time; therefore, it will provide a "snapshot" of vendors' attitudes toward the proposed regulatory changes to the payment ecosystem.

Reliability and Validity

Ensuring the mathematical and conceptual integrity of the measurement instrument is essential for the study to succeed. To establish content validity, we plan to adapt our survey questions from existing validated peer-reviewed studies in the area of Malaysian e-wallet and mobile commerce use (Teo et al., 2020; Phuong et al., 2020). Before beginning the primary data collection process, a pilot study will be performed on a small group of the target population. The purpose of this pilot test is to determine if there are any ambiguities in the wording of the questions. It's especially important that we translate academic terminology into language that can be easily understood by vendors who may not have received formal technical training. During the data analysis process, construct reliability will be determined through Cronbach's Alpha Coefficient. As per established statistical thresholds in information systems research, we will require Cronbach's Alpha values to be equal to or greater than .70 for every theoretical construct in order to verify internal consistency and reliability (Hair et al., 2014; Nunnally, 1978). Following the

assessment of construct reliability, we will evaluate discriminant and convergent validity via Average Variance Extracted metrics within the Partial Least Squares Structural Equation Modeling software environment.

Research Methods and Data Collection Issues

The data collection method employed here will be the distribution of self-administered questionnaires to food and beverage stall operators located in the Kampung Baru area. The questionnaire will consist of two parts. Part one will contain demographic questions about each respondent and part two will measure the theoretical constructs using a standard five-point Likert Scale from "strongly disagree" to "strongly agree" (Daragmeh et al., 2021; Phuong et al., 2020). Due to the lack of an existing formal register listing all informal stalls, a combination of purposive and convenience sampling will be utilized. To ensure maximum participation rate among vendors while minimizing disruption to their day-to-day operations, the researcher will physically go to the site of business during off-peak hours. One of the most important aspects of using this type of methodology is ensuring that all ethical guidelines and national law regarding personal data are followed. In particular, the Personal Data Protection Act 2010 provides general principles and notice and choice principles related to how organizations collect, use, store and disclose personal data. Specifically, section 6(1)(a) states that an organization must have obtained explicit consent from the individual whose personal data is being processed. In addition, section 6(2)(a) states that organizations must provide individuals with notice as to why their personal data is being collected and what types of third-party organizations may receive access to their personal data. Given these provisions, the questionnaire will include a detailed bilingual explanation at its commencement describing the academic nature of the study, assuring complete anonymity and stating that participation is entirely voluntary.

Although access to the commercial site is generally public, obtaining the true cooperation of the vendors requires culturally sensitive communication regarding the research objective and providing absolute guarantees that the collected data will remain anonymous and will not be disclosed to regulatory or taxing bodies. By addressing these ethical issues before entering into discussions with potential survey participants, many of the primary barriers to accessing informal economy actors for surveying purposes can be reduced.

Task 5: Presentation

Presentation Video Link: [Adoption of Digital Payment - DuitNow QR](#)

Task 6: Reflective Practice Using the Gibbs Cycle

This in-depth research portfolio development experience gave me an understanding of how to conduct a thorough academic investigation, how to combine different types of macro- and micro-economic data, and how to evaluate new technologies for use in my research methodology. My thoughts about this educational experience were organized by following the steps of the Gibbs Reflective Cycle as I moved through the completion of each task and planned what I will do next based on what I learned.

Description

The researcher had to develop an Academic Portfolio which consisted of several components including: identifying a localized business problem; using generative Artificial Intelligence (AI) for finding relevant academic literature and formulating research parameters; and developing a comprehensive research proposal and presentation script. The researcher focused on how Micro-Enterprises in Malaysia's Food & Beverage sector are slow to adopt Digital Payment Systems, particularly those located in Kuala Lumpur. During this development phase, the researcher had to navigate through various reports from the Central Bank; understand the Technology Acceptance Model created by Fred Davis; find a balance between the theoretical aspirations of the project and the practical limitations of the methodology being used; and adhere to strict formatting standards.

Feelings

The initial engagement with the project created some anxiety, especially in relation to using generative artificial intelligence to explore literature and develop theories. There was a level of cognitive dissonance experienced by the researcher, who had to balance the obvious advantages (in terms of time savings) of automated data collection and analysis versus the long-established requirement in academia for researchers to manually verify their sources. However, as the portfolio evolved, the researcher found that her original anxiety had been replaced by genuine academic curiosity. The researcher's awareness that macro-level economic trends frequently conflict with local-level economic trends – for example, the continued use of cash as the primary method of payment in Kampung Baru even though national policies promote digital payment systems – inspired her to create a research design that would address this particular knowledge gap.

Evaluation

The process I used for creating my portfolio, although there were some analytical difficulties, proved to be very successful. In terms of positives, I have successfully applied both the Technology Acceptance

Model (TAM) and the Technology-Organization-Environment (TOE) frameworks in a real world local environment. In addition, the way in which I structured my tasks provided me with a logical path from identifying a general problem area to designing a specific methodology for addressing that issue. On the other hand, the biggest difficulty I faced when developing my portfolio was ensuring that all of the information generated by the AI simulation was true and accurate. As previously stated, the generative models used to create the AI simulation are known to produce highly believable academic stories but at times these stories cannot be verified. Therefore, I had to manually compare each piece of information generated by the AI simulation with data from credible sources such as the Department of Statistics Malaysia and Bank Negara Malaysia policy documents so that I could confirm the factual accuracy of the information presented in my portfolio.

Analysis

The primary conclusion that has emerged from completing this exercise is that the use of advanced technology-based systems to rapidly develop and structure research ideas is an invaluable resource during both the development of research ideas and the construction of a research plan. However, these tools are no substitute for the rigorous analytical review of a human researcher. The AI-generated structural models of cognitive behavioral concepts were very helpful in developing a general framework for how the variables being studied could be related. Nevertheless, the contextualization of those general models into the rigid requirements of Malaysia's Personal Data Protection Act 2010 (PDPA) and/or alignment of those models with the specific deadlines associated with the Interoperable Fund Transfer Framework (IFTF) established by the Central Bank of Malaysia required extensive, independent analytical synthesis. One of the main benefits derived from this exercise is that it illustrates the necessity of maintaining a skeptical attitude toward all information obtained through the research process. It also demonstrates the need for continuous verification of the accuracy of every piece of data collected during the course of the study. Finally, it illustrates the importance of being able to apply general theoretical models to the unique, local logistical constraints present in a particular situation. The researcher identified that understanding statistical limitations, like a Cronbach's alpha greater than 0.70 indicating acceptable reliability, is just as important as understanding the societal influences that affect vendor behavior.

Conclusion

Looking back at how the research proposal was developed, it would have been more effective if there had been a preliminary qualitative observation period before developing the final version of the quantitative questionnaire. Although the use of Partial Least Squares Structural Equation Modeling (PLS-SEM) as

part of the quantitative method utilized in this portfolio is both academically sound and practical, conducting early-stage informal interviews with members of the target audience might have provided additional insights into the factors that should be incorporated into an expanded version of the Technology Acceptance Model. The portfolio is a testament to the fact that conducting quality research requires striking a balance between creating ambitious theories and addressing practical issues related to conducting research, especially when examining informal economies.

Action Plan

The researcher intends to take a more critical and hybrid approach toward collecting data as he or she moves ahead in both an academic and professional setting. The first step will be to create a strict independent verification process for each point of data generated through the use of advanced digital tools (e.g., business analytics, market research) or academic writing prior to being integrated into any formal proposal. Additionally, the researcher will continue to utilize the principles outlined in the Technology Acceptance Model (TAM) to evaluate potential new operational systems in future work environments. This will ensure that both perceived utility and user experience are given priority to minimize resistance to technology adoption and maximize the potential for successful implementation.

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