ADOPTION OF SMART HOME AUTOMATION SYSTEM AMONG GEN Y IN MALAYSIA, A BEHAVIORAL STUDY.

BY

CHAI WEI JUN

LEE YI WOON

A final year project submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF MARKETING (HONS) UNIVERSITI TUNKU ABDUL RAHMAN TEH HONG PIOW FACULTY OF BUSINESS AND FINANCE

DEPARTMENT OF MARKETING

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(APPENDIX I)

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I am also thankful to the family members as well as friends in which had providing me with the moral support as well as the encouragement.

Thank you.

DEDICATION

This research project is exclusively dedicated to my supervisor, Dr. Chong Yee Lee as well as my friends and family members. Thank you for the supporting, encouragement and opinions that being given to me so that I can complete this research on time.

PREFACE

This final year research project is conducted to fulfil the requirement for the Bachelor of Marketing (Honours). The title of this study is "Adoption of Smart Home Automation System among Gen Y in Malaysia, a Behavioral Study."

While smart home technologies are widely studied in developed countries, there is limited research on SHAS adoption in Malaysia, especially among Generation Y. This gap encouraged us to explore the factors influencing their adoption intention by applying the Diffusion of Innovation (DOI) theory and extending it with two additional variables: perceived usefulness and technology awareness. The study provides insights into Gen Y's behavioral patterns and offers useful recommendations for academics, policymakers, and technology providers to encourage SHAS adoption in Malaysia.

ABSTRACT

In the current digital era, a smart home automation system (SHAS) is gaining popularity due to its diverse benefits for household use. However, the adoption of SHAS in Malaysia, especially among Generation Y (Gen-Y) citizens, remains low. This study examines the relationship between the theory of Diffusion of Innovation variables (relative advantage, compatibility, complexity, trialability, and observability), perceived usefulness (PU), technology awareness, and the intention to adopt SHAS among Malaysian Gen-Y. Using items adapted from selected sources, a closed-ended questionnaire was pre-tested and validated by pilot study participants. The final questionnaires were distributed online. Main survey data were collected through snowball sampling and analyzed both descriptively and inferentially to test the seven hypotheses. Trialability, PU, and technology awareness are significant variables. This suggests that real-world experiences, practical benefits in solving specific issues, and the level of awareness and familiarity with SHAS are important motivators for adoption among Gen-Y in Malaysia. Additionally, this study offers strategic insights for policymakers to improve current policies, develop new ones, and provides valuable knowledge for academics about the evolving digital environment and SHAS.

Keywords: Smart Home Automation Systems (SHAS), Theory of Diffusion of Innovation (DOI), Perceived Usefulness, Technology Awareness, Malaysian Gen-.

Subject area: T1-995 Technology (General)

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LIST OF ABBREVIATIONS

DV	Dependent Variable
IVs	Independent Variables
SHAS	Smart Home Automation System
DOI	Diffusion of Innovation
RA	Relative Advantage
CP	Compatibility
CL	Complexity
TB	Trialability
OB	Observability
PU	Perceived Usefulness
TA	Technology Awareness
TAM	Technology Acceptance Model

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CHAPTER 1: INTRODUCTION

1.1 Research Background

A smart home automation system (SHAS) utilizes internet-connected devices as enablers for monitoring household systems and appliances, was introduced in the 1980s in countries worldwide (Ashdown, 2023). A smart home system is also known as 'connected home' because the same Wi-Fi channel can be used to manage the remote control of several smart home devices in a residential premise simultaneously (Api, 2020) and independently (Yasar and Shea, 2023). The SHAS performs diverse functions, including temperature control, heating, lighting, and security, by using remote devices or centralized indoor stations (Hayes, 2024). Overall, it offers comfort, convenience, security, and energy efficiency to households (Yasar and Shea, 2023).

Like humans, the operating system of smart home devices expects to become smarter from time to time as it incorporates Artificial Intelligence (AI) for learning and thinking capability in making decisions (Api, 2020). With AI, the smart home devices become acquainted with users' likes or habits after collecting more information from users. The integration of AI usage into modern society, as technology advancement continues, fosters the acceptance of smart home automation systems (HousingWatch, 2024).

Based on the China Smart Home Market, Size, Share, and Forecasting report for 2024-2030 (n.d.), China has tremendous potential for the smart home industry due to the high internet penetration rate, national concerns on security and convenience, strong emphasis on low carbon emission, and growing demand for energy-saving. Additionally, China's enormous population and rapid urbanization further facilitate the dynamic smart home market in China (Statista, n.d.). Similarly, European countries such as the United Kingdom (UK), Belgium, France, Germany, Italy, and the Netherlands have experienced rapid growth of the smart home market due to the COVID-19 pandemic (NielsenIQ, 2024).

The adoption of smart home automation systems in Malaysia is expected to grow at a promising rate in selected residential areas (Dahlan, 2024). The system is highly governed by the local authority council under the Street, Drainage and Building Act 1974 (Act 133), the Uniform Building By-laws 1984, and the guidance prescribed by relevant authorized agencies (Dahlan, 2024). Several smart home automation system suppliers operate in Malaysia, such as WPM Home (Appendix 1), imt Smart Home (Appendix 2), and Smart Home Buddy (Appendix 3). WPM Home is one of the leading smart home brands in Malaysia. The imt Smart Home was established in 2018 and supported by iMalaysia Tech to promote and educate Malaysians about smart technology. Smart Home Buddy is a diversified, high-end distributor and retailer of smart home technology in Malaysia that offers a wide range of smart home appliances, including smart lighting, intercoms, home automation systems, and access control solutions.

Three core categories of smart home automation packages are offered in the Malaysian market, which are “Smart”, “Premium”, and “Exclusive”, targeting different segments of customers (Ptfsr, 2025). The “Smart” category (Appendix 4) was priced from RM10,000 for installation, which covers fundamental smart home features, such as Touch Tree, Valve Actuator Tree, and Presence Sensor Tree in the master bedroom, bathroom, and kitchen. The “Premium” category (Appendix 5) encompasses the “Smart” features with an extra functionality of In-Ceiling 7 Speaker, and was priced from RM15,000. The “Exclusive” category (Appendix 6) further improves the integration of diverse smart home features and is equipped with future-proof automation in every area of the houses to facilitate households’ unique needs, such as automating special functionality under different conditions or scenarios. The “Exclusive” category was priced from RM25,000.

This project targets the Gen-Y population who were born between 1981 and 1996, aged from 29 to 44, and reside in Malaysia. This population group has high involvement in sourcing personal homeownership and is tech-savvy, making them the potential users of SHAS (Rasyidah et al., 2020).

1.2 Problem Statements

The adoption of SHAS is generally lower in some developing countries, such as Malaysia, Thailand, and Indonesia (Rasyidah et al., 2020), although SHAS provides beneficial outcomes, and the coverage of internet accessibility and smartphone usage market is high in Malaysia. Gen-Y is tech-savvy and can familiarize themselves with innovative technology. This familiarity leads to increased selectivity, as individuals typically embrace new technologies only when there is clear evidence of improvement in their lives (Mohamad et al., 2021). This section discusses how the diffusion of innovations may influence the target users' intention to adopt SHAS.

It is a norm for potential buyers to compare the perceived usefulness and relative advantage of a product or service before making a purchasing or usage decision. Perceived usefulness (PU) refers to the perceived benefits that a user expects to gain upon using a product or service (Mashal et al., 2023; Nikou, 2019) or is centered around the product or service itself. For instance, SHAS provides users convenience, leisure, coziness, and safety, and improves users' health status (Kam et al., 2023). Relative advantage refers to the superior benefits that a user expects to gain as compared to alternative products or services (Kaur et al., 2020). For example, compared to conventional home monitoring systems, such as CCTV and alarm systems, SHAS enables real-time motion detection and monitoring of indoor and outdoor equipment using a smart device (*Securing Your Smart Home*, 2024). As a result, smart homes can be considered an improved version of conventional homes, which provide more household functions to users (Ezeh and Nkamnebe, 2022). Unfortunately, the value-added of PU and the superior benefits of SHAS's relative advantage do not encourage the adoption intention of systems. According to Adm-Enciser (2024), certain drawbacks of SHAS, such as high initial cost of installation and maintenance, reliance on the Internet, and overdependence on technology and environmental factors, may contribute to lower adoption intention of smart home automation systems. This project examines the impact of PU and the SHAS's relative advantages in motivating the Malaysian Gen-Y's adoption intention.

Potential users desire to select an automation system that matches their present internet usage pattern or daily living and working practices (Wei et al., 2019). A system that does not integrate smoothly into their daily routines may be perceived as irrelevant or tough to accept. Conversely, when innovations align with people's identity and daily lifestyle, they tend to have positive judgments about them (Kau et al., 2020; Nikou, 2019; Zhang and Liu, 2018). As SHAS is an innovation service, which is a relatively new service in the Malaysian market, it is worthwhile for this project to examine the level of SHAS compatibility with the Malaysian Gen-Y's current living lifestyle and the connection between compatibility and SHAS adoption intention.

Due to its technological advancement, users with low information technology knowledge perceive SHAS as a complex tool (Becks et al., 2023). Additionally, the process of identifying and resolving the malfunctioning device is considered complex when an unprecedented issue, such as a network breakdown or processing unit glitch, emerges (Arrow, 2023). Although Gen-Y is tech-savvy, the adoption of SHAS is still not a pervasive phenomenon in Malaysia, and not all Gen-Y have sufficient information technology knowledge (Arrow, 2023). Furthermore, SHAS requires periodic upgrades, maintenance, and troubleshooting (Jiding et al., 2024), which are provocative to potential users. The complexity problem motivates the project researchers to examine how Malaysian Gen-Y perceive the complexity of SHAS and to what extent complexity connects to their SHAS adoption intention.

Some innovative product or service suppliers, such as software providers, may offer a trial opportunity to potential users for assessing the product's applicability and beneficial outcomes (Chang et al., 2016). Trialability defines the degree to which an invention can be assessed on a smaller scale before adoption (Valier et al., 2008). As SHAS is an innovative and expensive service, it is essential to convince Gen-Y about the service performance by giving them a trial opportunity. The lack of trialability could provoke resistance, especially among those who have encountered technological distress (Hennig-Thurau et al., 2024). Despite its importance, there is a lack of research examining how the trial opportunity of SHAS encourages its adoption intention. To address the practical and knowledge gap, this project examines how trialability motivates the Malaysian Gen-Y to adopt SHAH.

Observability defines the degree to which consequences of an advanced technology are visible and obvious to potential users and/or others (Bedué and Fritzsche, 2021). On top of viewing product demonstrations and reading promotional materials, users also learn a technology system's details from word of mouth (WoM) circulated by people who are connected with them. are Being born in the technological era, Gen-Y is actively engaging in social media for sharing information and educating each other (Yusop and Sumari, 2013). Living in a close-knit community, the Malaysian Gen-Y's decision-making process is partially impacted by word-of-mouth (WoM) disseminated by family, friends, and social networks. SHAS is an innovative service in the Malaysian market, but online information and the distribution of WoM among Malaysians about SHAS are lacking. Possibly, this is because SHAS is not well-marketed in the domestic market. Information circulated by non-Malaysian users may have minimal impact on potential Malaysian users, as the technological and living environments in Malaysia and other countries are different. Furthermore, the Malaysian government rarely circulates promotional messages that can encourage citizens to adopt SHAS (Kam et al., 2023). Therefore, this project examines whether the Malaysian Gen-Y are skeptical about the adoption of SHAS due to the lack of circulation of positive WoM or messages, and to what extent observability connects to their SHAH adoption intention.

SHAS is a tool that offers enhanced convenience, efficiency, and security to living environments. Technology awareness refers to the user's knowledge of a technology's capabilities, features, potential use, cost, and benefits (Abubakar and Ahmad, 2014). Rasyidah et al. (2020) assert that Malaysians were not aware of the functionality and benefits of smart home systems and thereby interfering with their adoption intention. Chan (2024) stated that Malaysia has an extremely low adoption rate in Internet of Things (IoT), and the IoT-smart home technology penetration rate in Malaysia was only at 12.2% in 2021, which is lower than the worldwide average at 14.2% and Singapore at 28% (Leong, 2022). This project measures how respondents evaluate their technology awareness of SHAS in 2025 and to what extent the new level of technology awareness connects to the Malaysian Gen-Y's SHAS adoption intention.

To solve the diffusion of SHAS innovation problems, this project adopts the theory of Diffusion of Innovation (DOI) to examine the impacts of DOI variables: relative advantage, compatibility, complexity, trialability, and observability on respondents' intention to use SHAS. Additionally, this project extends the DOI framework by including the examination of two additional variables, PU and technology awareness.

1.3 Research Questions

Based on the statement of problems outlined above, the following research questions are examined.

i. To what extent do relative advantage, compatibility, complexity, trialability, and observability explain Malaysian Gen-Y's intention to adopt smart home automation systems?
ii. To what extent do the perceived usefulness and technology awareness explain Malaysian Gen-Y's intention to adopt smart home automation systems?

1.4 Research Objectives

Generally, this project examines the diffusion behavioral factors that affect Gen-Y's intention to adopt SHAS in Malaysia. Specifically, this research intends:

i. To measure the relationship between relative advantage, compatibility, complexity, trialability, and observability, and Malaysian Gen-Y's intention to adopt smart home automation systems.
ii. To measure the relationship between perceived usefulness and technology awareness, and the Malaysian Gen-Y's intention to adopt smart home automation systems.

1.5 Study Significant

1.5.1 For Policy Planning

The Malaysian government introduces smart programs, such as MyDigital and the National Fourth Industrial Revolution (4IR) Strategy, to encourage citizens to adopt digitalization systems, and focuses less on encouraging residents to adopt SHAS (Lo and Ainaa, 2021). The adoption of SHAS can reduce household-related incidents, including robberies, gas leaks, and fires. Statistics from Jabatan Bomba dan Penyelamat Malaysia reveal that in 2023, over 30,000 distress calls related to fire incidents were reported, resulting in significant financial losses of RM2.6 billion (The Sun, 2024). This emphasizes the need to improve home safety measures.

Although SHAS has been marketed in Malaysia before the year 2020, the service suppliers did not implement attractive and aggressive promotional programs that could overcome purchasing barriers, such as high installation and maintenance costs and complexity issues (Hong et al., 2020). The results of this project provide useful indications to practitioners on the effects of technology diffusion factors, such as relative advantage, compatibility, complexity, trialability, and observability, including PU and technology awareness, in overshadowing the negative impact of cost and complexity. For instance, if Gen-Y perceives that SHAS provides more beneficial outcomes compared to conventional systems, such as CCTV and alarm systems, suppliers should take practical actions to enhance the strength of SHAS's relative advantage. When more potential buyers realize that the application of SHAS helps users to reduce the possibility of suffering property and life losses, the impact of relative advantage, such as convenience or enhancements in safety as compared to a conventional security system, will override the cost and complexity issues (Mustafa et al., 2021). Policymakers can highlight these benefits through campaigns, tax incentives, or rebates linked to measurable outcomes, such as energy savings or crime reduction (Basarir-Ozel et al., 2022).

If PU is significant, the majority of the respondents are more willing to adopt smart home technologies when they recognize the usefulness of SHAS, such as the ability to enhance home security measures by receiving real-time or immediate responses from the system. Therefore, service suppliers need to make potential buyers aware of real-time feedback or actions that can be materialized through SHAS (Han et al. 2021), and public agencies can consider providing incentives, such as subsidies or tax reductions, for essential smart home automation equipment that uses AI (Pal et al., 2019). Additionally, public agencies and the private sector, particularly with housing developers, can collaborate to provide optional services for the installation of SHAS at an affordable cost to specific target users (Jayasena et al., 2022).

The significant effect of complexity indicates that SHAS technologies are considered challenging to understand or use. Such a result implies that service providers, public agencies, or non-government organizations can address this issue by promoting user training workshops, mandating simplified user interfaces in vendor regulations, or establishing helplines to assist first-time users (Becks et al., 2023). If compatibility is significant, it indicates that Gen-Y seeks SHAS to integrate seamlessly with their digital living and/or working lifestyle. The government may partner with telecom or IoT providers to strengthen SHAS compatibility by integrating the service system with a wide range of smart devices, which are favored by Gen-Y (Phan and Kim, 2020).

The project's research results enable tailored safety plans to reduce the risk of home accidents and help achieve future smart city goals. As Malaysia evolves into a more digitized and interconnected society, ensuring that safety planning aligns with how people engage with it will lead to greater acceptance, improved safety outcomes, and a stronger population (Hui et al., 2025).

1.5.2 For Literature

While numerous studies have applied the DOI theory in Western or developed markets (Rogers et al., 2014), not many studies have been done in developing countries like Malaysia and targeting Gen-Y, where cultural, economic, and infrastructure factors affect adoption behavior in their own unique ways (Wang et al., 2024). This study addresses the gaps.

This research expands the fundamental DOI framework by incorporating two additional variables: PU and technology awareness. PU is defined as a psychological belief that SHAS can improve security, comfort, and efficiency in daily life (Mashal et al., 2023; Nikou, 2019). Although PU has been extensively examined in contexts related to personal investments and home security using the technology acceptance model (Rock et al., 2022), its application within the DOI framework, specifically concerning SHAS and Gen-Y in Malaysia, has yet to be explored (Martin, 2022). The conceptual framework of this project addresses the gaps.

Additionally, the testing of Technology Awareness, together with DOI variables and PU, offers new knowledge to researchers. In the Malaysian context, technology awareness is crucial because not all Gen-Y shares similar degrees of internet exposure and information technology capability (Ku-Mahamud et al., 2019), which helps users to manage and control several smart home devices for diverse functions, including temperature control, heating, lighting, and security in a residential premise simultaneously. The results of this construct provide valuable insights into the disparities in adoption rates, digital immersion in different regions, and profile backgrounds.

Moreover, the findings contribute to the current scholarly discourse on smart living, digital transformation, and innovations in home security, especially for demographics that are typically tech-savvy yet wary of embracing new technologies (Roman, 2024). As smart devices increasingly integrate into our daily lives, it’s crucial to conduct long-term studies that monitor how people use them over time. This will help ensure that theories related to technology innovation remain relevant and up to date. The project’s findings contribute to the scholarly discourse on smart living and digital transformation.

1.6 Report Layout

Chapter 1 introduces the SHAS, the project’s target population; research issue and problems that lead to research questions and objectives; and the significance of the study in addressing specific practical and literature gaps. Chapter 2 discusses the differences between the current study and relevant prior studies that adopted the DOI framework, as well as additional variables (PU and technology awareness). The review of literature helps the project’s researchers to identify and address the elicited gaps, and to formulate the current study’s conceptual framework and hypotheses. Chapter 3 explains the project’s research methodology, which includes the research design, sampling procedures, development of the questionnaire, data collection methods, and how the collected data were analyzed to confirm the hypotheses. Chapter 4 presents the descriptive and inferential statistical results. Chapter 5 discusses the implications of the study's results for theory, policy, and practice. It also addresses the study's limitations and provides recommendations for future research.

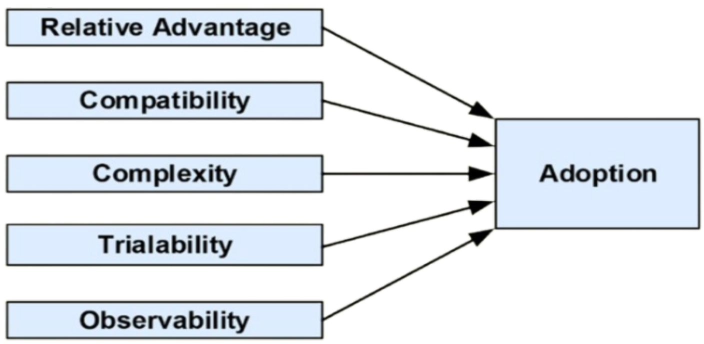
CHAPTER 2: LITERATURE REVIEW

2.1 Diffusion of Innovation (DOI) Theory's Theoretical Framework

According to Miller (2017), Rogers was considered the first to commence the diffusion study across disciplines, and in areas that specifically lack the theoretical writing regarding diffusion. Besides, he has written books and published five different editions of the seminal text "Diffusion of Innovations. Besides, the Diffusion of Innovation (DOI) theory was established to interpret and forecast the process and influencing factors of the transmission and acceptance of innovations in society (Guo and Huang, 2024). The DOI framework has been used to examine the influence of diffusion variables on intention and actual behavior related to technology innovation (Niu, 2019). Additionally, the theory has been widely applied by researchers in the areas of social innovations, businesses, and organizational technology projects for decades, on both organizational and individual levels (Niu, 2019). This theory initially consists of five elements: relative advantage, compatibility, complexity, trialability, and observability (see Figure 1).

Figure 1

The Theoretical Framework of Diffusion of Innovation (DOI) Theory



Source: Al Hadwer et al. (2021)

Adoption intention refers to an individual's willingness and motivation to accept innovative products, services, or technology (Rogers, 1983). In this project, adoption intention refers to user' intent to use SHAS in their home near future, given the expected growth in the market.

Relative advantage represents the noticed advantage of an innovation over its predecessor, often measured in terms of economic profitability, how popular it is, or other important factors (Rogers, 1983). This project defines relative advantage as the degree to which SHAS are more convenient and enhance the quality of life compared to conventional home security systems, such as CCTV and alarm systems (Kaur et al., 2020; Lau et al., 2022).

Compatibility measures how well an innovation fits with the potential adopter's existing values, past experiences, and their needs (Rogers, 1983). This project defines compatibility as the relevance of SHAS that fit with the user’s lifestyle, habits, and home environment (Kaur et al., 2020; Nikou, 2019).

Complexity shows the degree to which an innovation is perceived as comparatively challenging to understand and utilize (Rogers, 1983). This project defines complexity as the degree of difficulty in comprehending and using the SHAS, monitoring the home security (Kaur et al., 2020), and the effort needed for learning the application of SHAS (Baiod and Hussain, 2024).

Trialability characterizes the extent to which an innovation can be tried in a restricted manner (Rogers, 1983). In our project, TB is interpreted as the probability of experiencing the SHAS’s operating processes and outcomes, before adopting them (Nikou, 2019).

Observability refers to the extent to which an innovation’s consequences are visible to other people (Rogers, 1983). In our project, observability is related to the degree of visibility of SHAH’s operating processes and outcomes to our targeted respondents (Nikou, 2019) and the degree of desired innovation design as respondents expected (Kumar and Kaushik, 2022)

The Diffusion of Innovation (DOI) Studies

This theory has been utilized in examining the potential adoption of portable pork DNA detection devices (Ghazali et al., 2022), digital technologies (Alyoubi and Yamin, 2024), and smart living services (Lu and Huang, 2025). However, articles discussing the adoption of SHAS among Gen-Y in Malaysia are limitedly published in academic journals. Furthermore, the additional variables, including strategic orientation and firm characteristics (Mamun, 2017) as well as environmental pressure and organizational capabilities (Alyoubi and Yamin, 2024), are embedded with all the DOI’s dimensional variables.

Besides, some studies examined certain additional variables with partial DOI’s independent variables (IVs), such as persuasive strategy, assertive strategy, and relationship-based strategy (Chiu and Fogel, 2017), performance expectancy, effort expectancy, and attitude (Ghazali et al, 2022), as well as perceived network size, and service popularity (Lu and Huang, 2025) (see Table 1).

Table 1

Past Conceptual Models that Adopted the Diffusion of Innovation (DOI) Framework

Authors	Context of Study	DV	Basic Variables					Additional variables
			Relative Advantage	Compatibility	Complexity	Trialability	Observability	
Mamun (2017)	Diffusion of innovation among Malaysian manufacturing SMEs	Innovation adoption	✓	✓	✓	✓	✓	Strategic orientation and firm characteristics
Alyoubi and Yamin (2024)	Investigating the role of diffusion of innovation theory, environmental pressure, and organisational capabilities towards adoption of digital technologies	Innovation adoption	✓	✓	✓	✓	✓	Environmental pressure and organizational capabilities
Chiu and Fogel (2017)	The role of manager influence strategies and innovation attributes in innovation implementation	Innovation adoption	✓		✓			Persuasive strategy, assertive strategy and relationship-based strategy
Ghazali et al. (2022)	The potential adoption of portable pork DNA detection device	Purchase intention	✓	✓	✓			Performance expectancy, effort expectancy and attitude
Lu & Huang (2025)	Smart living services' factors and influences on subjective well-being and intention to use	Intention to use and subjective well-being		✓	✓	✓		Perceived network size, service popularity, perceived service complementarity, perceived usefulness and perceived enjoyment

The incorporation of PU and technology awareness as additional IVs in the DOI framework has rarely been done in past empirical research, too. The project's conceptual model, therefore, addresses this gap.

2.2 Perceived Usefulness Studies

Perceived usefulness (PU) represents the degree to which an individual believes that their working productivity will improve upon using an innovative system (Davis, 1989). To elaborate, PU of this project also measures the degree to which SHAS enables individuals to accomplish the home security monitoring tasks more quickly and easily, and to receive real-time or immediate responses if unprecedented safety and security issues emerge (Mashal et al., 2013; Nikou, 2019). The PU in this project represents how well the usage of SHAS can benefit users in managing home safety and monitoring tasks, including receiving real-time alerts for fire, gas leaks, or break-ins (Mashal et al., 2013; Nikou, 2019).

PU was widely examined in many Technology Acceptance Model (TAM) studies. For instance, Keržič et al. (2019) assert that the adoption of digital platform usage increases when users believe the innovation will enhance their learning effectiveness. In Ambalov's (2021) study, the adoption of business analytics increases if the innovation enhances work efficiency and productivity. Sun and Moon (2024) tested PU in mobile services, and results show that the usefulness of the services shaped users' value perceptions.

Compared to the TAM studies mentioned above, Nikou (2019) used the DOI framework and tested the DOI, PU, perceived innovation, and perceived cost in explaining the study respondents' adoption of SHAS. However, compared to this project's conceptual model, Nikou (2019) tested only partial DOI variables: compatibility, trialability, and observability.

2.3. Technology Awareness Studies

Technology awareness (TA) represents the level of a user's knowledge about a technology's capabilities, features, potential use, cost, and benefits (Abubakar and Ahmad, 2014). This project defines TA as the level of respondents' awareness about the availability and trading of SHAS in the domestic market (Kountchou et al., 2025). The influence of TA has been examined for the transport industry's e-service (Ahmet et al., 2016), 3D food printing technology (Ng et al., 2022), and solar energy adoption intention (Aravindan et al., 2022).

The mediation level of TA on the relationship between social impact and behavioral intention was examined in Abubakar and Ahmad's (2014) study. Meanwhile, Zhang et al.'s (2015) study integrated TA with the DOI variables in the e-appointment system context. Overall, empirical research that has examined the direct effects of TA and DOI variables on the adoption intention of SHAS among Gen-Y in Malaysia is still rare. This study addresses the gap.

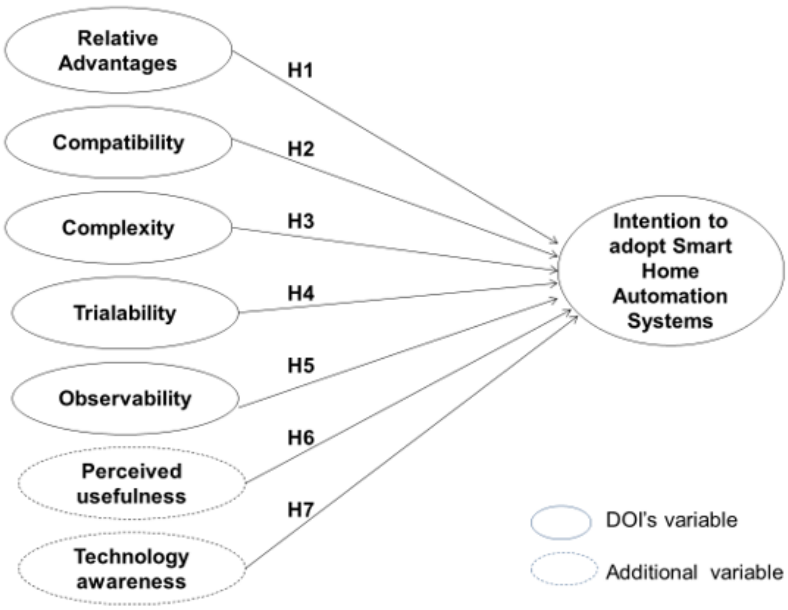
2.4 Current Conceptual Model

The conceptual model was developed according to the statement of problems, research questions, and research objectives. The model consists of five DOI variables and two additional

IVs (see Figure 2). The model projects that IV exerts a direct effect on the change of the DV, intention to use SHAH, using a deductive approach. The hypothetical relationships between each pair of IV and DV are discussed in the next section, 2.5. The definitions of each variable are discussed in sections 2.1, 2.2, and 2.3.

Figure 2

Current Research Model



2.5 Hypotheses Development

2.5.1 Relative Advantage and Adoption Intention

Relative advantage describes the potential advantages of implementing SHAS in comparison to traditional home layouts. When potential users or buyers perceive that the study object provides more beneficial outcomes, such as convenience, improved security, and lower energy consumption (Pandiyan et al., 2023) or long-term value (Hui et al., 2019), compared to other equivalent objects, the target's adoption intention increases. However, Xie et al. (2021) observed that higher relative advantage may not increase adoption intention if other variables, which are not examined in empirical research, such as uncertainty emotion or costs, override the positive or negative perceived relative advantages, which eventually lower the rate of adoption. Therefore, our study examines to what extent the relative advantages of SHAS as compared to other automation systems, such as CCTV or alarm systems, are connected with the Malaysian Gen-Y's intention to adopt SHAS. See H1.

H1: The relative advantage of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

2.5.2 Compatibility and Adoption Intention

Compatibility refers to how the usage of SHAS could align with users' existing lifestyles, values, and technological practices. Studies support that compatibility and intention behavior are related when the target user (such as Gen-Y in Brous et al.'s (2020) study) is more likely to adopt smart systems if the operating system can connect with users' existing mobile devices, integrate well with users' daily lives and home environments (Gøthesen et al., 2023), and is easy to sync devices (Ng et al., 2024). Therefore, our study proposes H2.

H2: The compatibility of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

2.5.3 Complexity and Adoption Intention

Studies support that the degree of complexity in using the studied object influences the adoption of an innovation or new technology and inhibits the adoption tendency. A technology with a higher degree of complexity constitutes a greater challenge to users, which relates to users' knowledge and technical capacity in handling the system (Tian et al., 2024) and high maintenance costs (Lai et al., 2018) - and eventually demotivates users to adopt it (Hashimy et al., 2022). Nevertheless, when users have a high level of digital literacy, they can operate a technology system with a high degree of complexity (Shaikh and Amin, 2024), which will not jeopardize the technological system usage intention (Shaikh and Amin, 2024). This project anticipates that Gen-Y can operate and handle SHAS because they were born in the technology revolution era. Furthermore, in the AI technological information era, users can easily source information from the internet if they have queries. The service providers handle the system installation and maintenance. However, the high installation and maintenance costs may lower the adoption intention. Therefore, this project examines the degree of complexity as perceived by Gen-Y and to what extent complexity relates to adoption intention, see H3.

H3: The complexity of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

2.5.4 Trialability and Adoption Intention

Trialability refers to the extent to which customers can test SHAS before fully adopting an innovative system. Respondents agreed that the provision of trialability opportunity reduces their ambiguity about the studied system's performance, which eventually boosts their confidence and increases their actual purchase in the future (Wang et al., 2024). Such a trial experiential engagement is particularly effective among younger generations (Hubert et al., 2019) as they can assess their capability in handling and monitoring a new technological system. This project predicts that the provision of a trial opportunity could encourage or discourage the Malaysian Gen-Y's adoption intention, see H4.

> H4: The trialability of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

2.5.5 Observability and Adoption Intention

Observability inflicts a significant positive relationship with the adoption intention as the users value the measurability, communicability, and visibility of the innovation's functionality (Alam et al., 2022) through product demonstration, promotional materials, and/or words of mouth circulated by influential people, such as family, social networks, or colleagues. Users' intention to use or not to use an innovation will be formed once they have evaluated the performance of a technology operating system - its advantages and disadvantages - through their observation (Qutaishat et al., 2023). Communication within workers in a company (a form of observability method) instills users with a sense of security and trust, whether to adopt or not to adopt an innovation (Verma et al., 2025). The project predicts that observability is an essential determinant in encouraging Gen-Y to use or not to use the SHAS variable because not many residents in Malaysia have adopted the system. Ability to see, feel, or sense the system performance through product demonstration, promotional materials, and WoM is expected to increase or decrease the target's intention adoption behavior, see H5.

> H5: The observability of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

2.5.6 Perceived Usefulness and Adoption Intention

Perceived usefulness refers to the belief that the adoption of SHAS can improve customers' quality of life. If the study technological object can improve safety and convenience (Shuhaiber et al., 2023) or increase efficiency in energy consumption (Wang et al., 2024), respondents are more likely to purchase and/or use them. However, Manfreda and Mijač (2024) found that usefulness alone does not guarantee adoption if individuals have concerns about perceived risk or affordability. Therefore, this study examines to what extent the perceived usefulness of SHAS motivates Gen-Y's intention to adopt them, see H6.

H6: The perceived usefulness of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

2.5.7 Technology Awareness and Adoption Intention

Technology awareness is essential in expediting the performance expectancy, effort expectancy, and facilitating condition, which eventually fostered the adoption intention of solar energy (Aravindan et al., 2022). For instance, technology awareness determines respondents' intention for vaccination, which initially aims to reduce virus infection across the globe (Dwivedi and Khedlekar, 2025). Low technology awareness may not help respondents form a favorable attitude toward using 3D food printing technology (Ng et al., 2022). The level of awareness of an innovation, such as SHAS, is expected to create a significant effect on intention adoption. When people are not aware of the availability of a technological system, their tendency to search for more information is lacking, which will undermine the adoption intention. Thus, the following hypothesis is anticipated:

H7: The technology awareness of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.

CHAPTER 3: METHODOLOGY

3.1 Research Design

As the independent and dependent variables (IVs and DVs) have been examined in numerous empirical studies, exploratory research to elicit potential variables and items is no longer necessary. Therefore, quantitative data is collected using a closed-ended questionnaire, in which the measuring items of each variable were adopted and modified from selected sources.

This is descriptive research because the project collects cross-sectional data that shows the nature of the relationship between each pair of IV and DV at a specific time period (Shinija, 2024). The length of this research (final year project, FYP) is only valid for two trimesters. Longitudinal data is more appropriate for causal research as the cause and consequent effects take time to develop. The data were analyzed statistically to confirm the current hypothetical relationships. The statistical inferential analysis results help the project to discover alternative solutions for existing issues.

3.2 Sampling Design

3.2.1 Target Population

This project targets Gen-Y, who were born between 1981 and 1996 and are aged 29 to 44, who currently reside in Malaysia, irrespective of their country of citizenship, including Malaysian citizens, permanent residents, and expatriates. This group expects to consider the usage of SHAS. Their involvement in homeownership increases as they have sufficient disposable income after years of working experience (Rasyidah et al., 2020).

3.2.2 Sampling Frame

Sampling frame entails a list of all units within the population from which a sample is chosen. It is not feasible for the project researchers to obtain the sampling frames from the National Registration Agency for Malaysian Gen-Y citizens and permanent residents, and the expatriate list from the immigration agency. Government agencies will never release the identity of any citizen or resident to the public. In this circumstance, we are unable to obtain the sampling frames.

3.2.3 Sampling Design

Without the sampling frame, it is not feasible for the project to plan and carry out a probability sampling method. The non-probability sampling processes were carefully planned and implemented to ensure the participating respondents could represent the target population as closely as possible. This project used two non-probability sampling methods: judgmental and snowball sampling.

Judgmental sampling was used to filter the respondents' characteristics, like age range and currently reside in Malaysia. Additionally, the DV of this project is an intentional behavioral variable; therefore, the respondents also include those who have not used the study SHAS yet. The screening questions in the questionnaire display the filtering criteria to ensure the main survey data are collected from the target population representatives.

The unavailability of a sampling frame made it challenging for the project researchers to invite the target population's representatives who are beyond the project researchers' reach (Pasikowski, 2024). The snowball sampling method was used. Firstly, the project researchers contacted those they had a connection, such as family, social networks, and acquaintances who met the target population definition. After they had completed the hard-copy or soft-copy questionnaire, they were requested to invite their contacts to participate in the survey by sharing the e-survey link.

If the invited participants do not meet the screening questions' criteria, the e-survey will end the survey automatically. The removed participants can continue to share the e-survey link with other potential participants. The invitation process continued until the desired sample size was reached. This referral approach allowed the study researchers to quickly access a wider and more diverse sample.

3.2.4 Sample Size

Sample size refers to the number of respondents who are participating in our research, serving as the representatives of the population. As of 21st April 2025, the total population of Malaysia was stated as 35,895,976 (*Malaysia Population (2025) - Worldometer*, n.d.), and the estimated Gen-Y population in Malaysia was approximately 24% Omsan (2023). Therefore, the estimated population size of Gen-Y is more than eight million. According to Krejcie and

Morgan's sample size table (see Table 2), the ideal sample size for a population size of one million or more is 384. Therefore, 384 is the project's ideal sample size.

Table 2

Sample Size Table

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note: N= Population; S= Sample size

Source: Krejcie and Morgan, 1970

3.3 Data Collection

This section discusses how the survey instrument, the questionnaire, was designed and the fieldwork process of the main survey.

3.3.1 Questionnaire Design

a. Pre-test

The project researchers initiated the pre-test by inviting their FYP supervisor to vet the drafted questionnaire. The item statements of each variable that related to the current study context were extracted from selected sources. Then, the researchers modified the statements so that they could reflect the context of this study. The FYP supervisor's assignment is to make sure the modified and original statements share the same meaning. The supervisor's feedback was shown in Table 3. After modifying the statements again as per the supervisor's feedback, the project's second examiner was invited to give her comments during the FYP2 presentation.

The vetting and rectifying processes were carried out to ensure the researchers can collect data that measures each variable as valid as possible.

Table 3

Feedback from a Pre-test Expert

Variable	Amended item statement	Source
Relative Advantage	• Smart home automation systems ~~are having~~ have many advantages over ~~numerous benefits as compared to~~ ~~the~~ conventional home security systems. • Smart home automation systems are more convenient than ~~the~~ conventional home systems. • Smart home automation systems ~~able to optimize my standards of living in home~~ enhance the quality of life in a home.	Kaur et al. (2020) Lau et al. (2022)
Compatibility	• Smart home automation systems ~~fit well with my lifestyle~~ are compatible with every aspect of my life. • ~~Using~~ Smart home automation systems ~~aligns with my current habits~~ are compatible with my current living environment. • Smart home automation is compatible with my home. Ok	Kaur et al. (2020) Nikou (2019)
Trialability	• ~~I want to try out smart home automation systems before adopting them~~. I need to try out and experiment with the smart home automation systems before purchasing. • ~~Questioning and understanding smart home automation systems is important before adoption~~. I need to ask questions about smart home automation systems and get their replies before buying and using them. • ~~Testing smart home automation systems features beforehand helps me make better decisions.~~ The ability to test out the smart home automation systems will increase adoption decisions.	Nikou (2019) Hubert et al. (2019)
Complexity	• ~~Adopting~~ Using smart home automation systems to monitor ~~can ease my progress in~~ ~~monitoring~~ my home ~~conditions~~ security-is convenient for me. • ~~Adopting smart home automation systems allow me to regulate my home appliances conveniently~~. Using smart home automation systems to monitor my home security-is easy for me. • ~~I will spend huge amount of time and effort to learn with the smart home automation systems~~. I do not need a lot of effort to learn the smart home automation systems.	Kaur et al. (2020) Baiod and Hussain (2024)
Observability	• ~~I think that viewing the advantages of people surrounding in utilizing the smart home automation systems is vital to me~~. I need to know the benefits of using smart home automation systems from current users. • ~~It is compulsory to view the users of smart home automation systems before its installation and utilization.~~ I need to know that others have used the smart home automation systems before me. • ~~I think that~~ The design of ~~the~~ smart home automation systems should be ~~are stylish~~ ~~and~~ innovative ~~to me~~.	Nikou (2019) Kumar and Kaushik (2022)
Perceived Usefulness	• ~~I think that smart home automation systems are efficient in managing household tasks~~. Smart home automation systems would	Nikou, (2019)

	enable me to accomplish the home security monitoring tasks more quickly. • ~~I think smart home automation systems are beneficial for improving daily routines~~. Smart home automation systems would make my home security monitoring tasks easier. • Smart home automation systems ~~enhance my sense of safety and control at home~~ provide users with real-time or immediate responses that can improve safety and security.	Mashal et al. (2023)
Technology Awareness	• I am aware of the existence of smart home automation systems. OK • I am aware that smart home automation systems are open ~~for~~ to all classes of individuals. • I am aware ~~about~~ that smart home automation systems can prevent me from tedious housework.	Kountchou et al. (2025) Vafaei-Zadeh et al. (2024)
Intentional to adopt smart home automation systems	• ~~I plan to use smart home automation systems in the future~~. I intend to use smart home automation systems in the future. • ~~I think I will adopt smart home automation systems when the system are well spread in the market~~. I will use them, given that the market for smart home automation systems will increase. • I ~~intend~~ plan to ~~install~~ use smart home automation systems in my home soon.	Nikou (2019)

b. Pilot Study

To ensure the respondents can truly comprehend the measure of each item statement, the pre-tested questionnaire was given to a group of target population representatives, or pilot study participants, for vetting. In this case, the project researchers invited 30 participants to identify wordings that are unclear to them. The pilot study was carried out in the form focus group with our friends and families who met the criteria during our semester break.

After completing the pilot study, none of the participants suggested rectification is needed, as they understand what each item aims to measure. To ensure all participants provide a consistent evaluation on the items used to measure each variable, the participants, then, were requested to provide feedback on the questionnaire's items. The purpose is to enable the project researchers to compute the reliability coefficient, Cronbach's alpha score for each variable. If most participants rated all items of a variable at a consistent range of disagreement and agreement levels, the coefficient score should be at least 0.6 (Morin, 2023). Table 4 shows the reliability test results, where the scores for all variables are higher than 0.6. As a result, the vetted questionnaire was finalized, and the item statements were retained and used for the main survey's respondents' evaluation (see Table 7).

Table 4

Pilot Study Reliability Test Result

Variable's name	Cronbach's Alpha	No of Items
Relative Advantage	0.784	3
Compatibility	0.813	3
Complexity	0.904	3
Trialability	0.905	3
Observability	0.831	3
Perceived Usefulness	0.849	3
Technology Awareness	0.883	3
Intention to adopt SHAS	0.779	3

Source: Developed from the current project's pilot study data

c. Main Survey's Questionnaire

The main survey's questionnaire consists of a cover page, which aims to inform selected respondents of the identity of the project's researchers so that respondents can contact them for any queries or clarification, the researchers' educational background, and the purpose of the research. This is to ensure that the respondents understand that the collected data is only used for academic research and will not be used for commercialization. After that, a personal data protection statement was provided to ensure respondents that their personal data would be kept private and confidential, and to get their consent for survey participation.

To reduce the sampling error rate, respondents are required to answer three screening questions to confirm whether they are aged between 29 and 45, aware of SHAS, and have not used SHAS before. If they answered 'yes' for the first and second screening questions and 'no' for the third screening question, they are invited to answer statements posted in Sections A and B.

Section A requests qualified respondents to provide their demographic profile data - gender, age, highest level of attained or currently pursued education, and level of personal income. Section B shows the item statements for each IV and DV. Respondents are requested to tick any of the five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) that best represents their response to each item statement. The finalized item statements are shown in Table 5. The main survey questionnaire is attached in Appendix 7.

Table 5

The Finalized Questionnaire Item Statements

Code	Variable and items	Source
Relative Advantage		
RA1	Smart home automation systems have many advantages over conventional home security systems.	Kaur et al. (2020)
RA2	Smart home automation systems are more convenient than conventional home systems.	
RA3	Smart home automation systems enhance the quality of life in a home.	Lau et al. (2022)
Compatibility		
CP1	Smart home automation systems are compatible with every aspect of my life.	Kaur et al. (2020)
CP2	Smart home automation systems are compatible with my current living environment.	
CP3	Smart home automation is compatible with my home.	Nikou (2019)
Complexity		
CL1	Using smart home automation systems to monitor my home security is convenient for me.	Kaur et al. (2020)
CL2	Using smart home automation systems to monitor my home security is easy for me.	
CL3	I do not need a lot of effort to learn the smart home automation systems.	Bajod and Hussain (2024)
Trialability		
TB1	I need to try out and experiment with the smart home automation systems before purchasing.	Nikou (2019)
TB2	I need to ask questions about smart home automation systems and get their replies before buying and using them.	
TB3	The ability to test out the smart home automation systems will increase adoption decisions.	Hubert et al. (2019)
Observability		
OB1	I need to know the benefits of using smart home automation systems from current users.	Nikou (2019)
OB2	I need to know that others have used the smart home automation systems before me.	
OB3	The design of smart home automation systems should be innovative.	Kumar and Kaushik (2022)
Perceived Usefulness		
PU1	I feel that smart home automation systems would enable me to accomplish the monitoring of my home security more quickly.	Nikou (2019)
PU2	I feel that using smart home automation systems would make security monitoring tasks easier to do.	
PU3	Smart home automation systems provide users with real-time or immediate responses that can improve safety and security.	Mashal et al. (2023)
Technology Awareness		
TA1	I am aware of the existence of smart home automation systems.	Kountchou et al. (2025)
TA2	I am aware that smart home automation systems are open to all classes of individuals.	

TA3	I am aware that smart home automation systems can prevent me from tedious housework.	Vafaei-Zadeh et al. (2024)
Intentional to adopt smart home automation systems		
Int1	I intend to use smart home automation systems in the future.	Nikou (2019)
Int2	I will use them, given that the market for smart home automation systems will increase.	
Int3	I plan to use smart home automation systems in my residential home in the near future.	

d. Main Study Fieldwork

To facilitate the snowballing sampling process, an e-questionnaire, which was designed with Google Forms, was distributed to the respondents. The main study fieldwork started in June 2025 after completing the pre-test and pilot study processes and obtaining ethical approval from the University. The e-questionnaires were uploaded in digital channels such as WhatsApp, Facebook, and Instagram for us to reach our respondents and for the respondents to invite their family, social network, colleagues, and acquaintances for participation. Once the invited participants fulfilled the screening question criteria, the Google system allowed them to answer statements posted in Sections A and B. If they do not fulfil, the Google system ends the survey session.

Fortunately, 416 responses were collected within a month, on 26 June 2025, and the data collection process is officially ended. During the data collection period, we did not receive any email from participating respondents. The Google Excel form was downloaded for data screening and analysis. The detail is discussed in section 3.4, data analysis.

3.4 Data Analysis

After downloading the Google Excel form that reflects the answers given by respondents who had used the created Google e-questionnaire, the data is screened. No respondents requested a hard-copy questionnaire. So, only the e-questionnaire's responses were screened. All respondents had provided their responses by ticking only one of the Likert-scale points for Sections A and B. A total of 416 answered the e-questionnaire were received but 32 were voided because these respondents did not fulfill the requirement in our screening question. The remaining 384 responses, which fit the ideal sample size, were descriptively and inferentially analyzed.

3.4.1 Descriptive Analysis

To view the valid 384 respondents' distribution count and rate of their demographic profiles, the answers to Section A's responses were descriptively analyzed by computing the frequency count and percentage. The results enable project researchers to check whether the frequency and percentage of the components of each demographic variable, such as males and females, represent the population's parameters.

3.4.2 Inferential Analysis

In testing the hypothesis, the 384 collected data were inferentially analyzed with a series of statistical analyses. It is essential to ensure that most respondents have ticked the Likert-scale point for each item that aims to measure each variable at a similar range of disagreement or agreement. The consistent behavior reflects the level of the data's reliability. Reliability coefficients, Cronbach's alpha for each variable, were calculated. A value of 0.70 is considered the threshold value to meet the reliability requirement in larger sample studies, and if the value is greater than 0.9, this may suggest item redundancy or multicollinearity (Mat Nawi et al., 2020).

After fulfilling the reliability requirement, Quantile-quantile (Q-Q) plots for each variable were plotted to check whether the examined variables' data are normally distributed. The Q-Q plot enables researchers to compare the differences between the actual and expected data if the data is normally distributed. A variable's data is considered normally distributed if the actual data points are close to the reference line or its related expected data point (Khatun, 2021).

Once the data fulfill the preliminary statistical requirements (reliable and linear), the project researchers test the nature of the relationship between each pair of IV and DV. First, Pearson's correlation coefficients for the pairs were computed to assess whether the IV and DV shared a consistent association. The correlation scores range between -1 and +1. Table 6 shows the threshold value of 0.4 is selected, given that data over this level will be considered.

Table 6

Rule of Thumb on the Indications of Pearson's Correlation Coefficients

Correlation coefficients	Correlation indication
< 0.10	Negligible
0.10 to 0.39	Weak
0.40 to 0.69	Moderate
0.70 to 0.89	Strong
> 0.89	Very Strong

Source: Schober et al., 2021

After that, the project researchers tested the extent of the direct effect created by each IV on the DV, using Multiple Linear Regression analysis. The regression consists of a few statistical analyses. Using the regression stepwise approach, the system will run a few rounds of regression analysis. In the first round, the approach system elicits the IV that has the highest significant effect on the DV. In the second round, the second most significant IV was elicited. The process continues until no more significant IV can be elicited by the system. The non-significant IV will be shown at the final round of the excluded variable's table.

The accumulated effect of significant IVs on the IV is denoted by R-squared (R^2) in the model summary table. To elaborate, R^2 assesses the extent to which the significant IVs account for every unit change of DV (James et al., 2023). R^2 values above 0.5 are moderate, while those above 0.75 are considered strong (Akoglu, 2018).

In the coefficient table, the t-test is used to assess the level of each significant IV's influence on a one-unit change of DV. Once the t-test is significant at p-value 0.05, the regression coefficient of each significant IV denotes its relative impact on the DV (Chén et al., 2023) and was used to establish the multiple linear regression equation of this project, see equation 1.

$$Y = a + bX_1 + cX_2 + dX_3 + eX_4 + fX_5 + g X_6 + hX_7 \quad (1)$$

where,

Y = DV, Intention to adopt SHAS

$X_1 = IV_1$ = Relative advantages

$X_2 = IV_2$ = Compatibility

$X_3 = IV_3$ = Complexity

$X_4 = IV_4$ = Trialability

$X_5 = IV_5$ = Observability

$X_6 = IV_6$ = Perceived Usefulness

$X_7 = IV_7$ = Technology Awareness

CHAPTER 4: DATA ANALYSIS AND RESULTS

4.0 Introduction

This chapter discusses the data findings descriptively and inferentially in the following sections.

4.1 Descriptive Result

4.1.1 Demographic Result

This study targets Gen-Y, aged between 29 and 44, who are aware of SHAS, and have not used a SHAS in their own residence during the main survey. Table 7 shows the frequency distribution of the respondents' demographic profile data. The count for females is higher than the males (58.3% versus 41.7%), indicating that the female respondents we reached out to are more willing to share their opinion, spend time, and engage as compared to the male respondents.

More than 50% of the respondents are aged between 29 and 33 years old, followed by those who are aged from 34 to 38 (30.7%) and 39 to 44 (15.9%). Probably, this is due to the adoption of the snowball sampling method, in which the first few batches of respondents are aged between 29 and 33, and their invited participants share the same range of ages. This likely explains why the majority of them hold either a diploma or a degree qualification (94.5%).

Graduating with a tertiary educational qualification and having five to ten years of work experience explains that 44.3% earn a range of personal income or allowances between RM4,001 and RM6,000, which reflects their capability to adopt SHAS. The details are shown in Table 7.

Table 7

Demographics Profiles of Current Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
• Male	173	41.6	41.6	41.6
• Female	243	58.4	58.4	100.0
Total	416	100.0	100.0	
Age				
• 29-33	222	53.4	53.4	53.4
• 34-38	126	30.3	30.3	83.7
• 39-44	68	16.3	16.3	100.0
Total	416	100.0	100.0	
Obtained or pursued education level				
• Secondary level or below	14	3.4	3.4	3.4
• Diploma or degree	390	93.8	93.8	97.1
• Master or doctorate	12	2.9	2.9	100.0
Total	416	100.0	100.0	
Monthly income/ allowance				
• < Rm2000	1	.2	.2	.2
• Rm2001-Rm4000	150	36.1	36.1	36.3
• Rm4001-Rm6000	177	42.5	42.5	78.8
• > Rm6000	88	21.2	21.2	100.0
Total	416	100.0	100.0	

4.2 Inferential Result

4.2.1 Reliability Result

Table 8 shows that all the reliability coefficient scores for the study variable are higher than the recommended minimum value of 0.7. This implies that every respondent had consistently ticked a similar range of disagreement and agreement scales for each item used to measure the same variable (Nawi et al., 2020). Meeting the reliability threshold enables us to continue the following statistical examination.

Table 8

Reliability Test's Result of Studied Variables for Main Survey Data

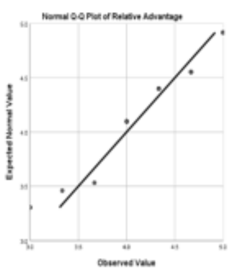
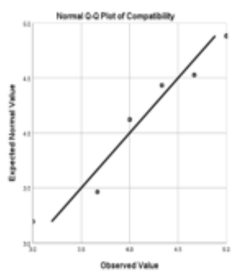
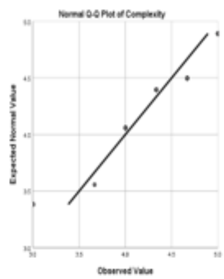
Variable's name	Cronbach's Alpha Score	Number of items	Reliability indication
Relative Advantage	0.852	3	Good
Compatibility	0.875	3	Good
Complexity	0.935	3	Excellent
Trialability	0.881	3	Good
Observability	0.832	3	Good
Perceived Usefulness	0.862	3	Good
Technology Awareness	0.910	5	Excellent
Intentional to adopt a smart home automation system	0.878	3	Good

4.2.2 Normality of Data Distribution

The Q-Q plots were plotted for each variable to check the data's linearity and normality. Figure 3 shows that the actual and expected data are marginally different. This supports that the variables' data are linearly and normally distributed, which signifies that the multiple linear regression analysis is a suitable method to analyze the relationship between each pair of hypothetical IVs and DVs.

Figure 3

Normality of Data Distribution of Each Variable

Relative Advantage	Compatibility	Complexity
		

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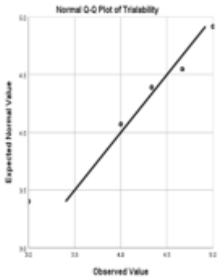
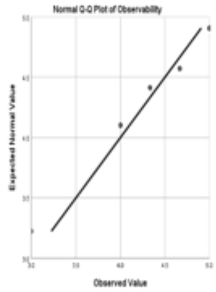
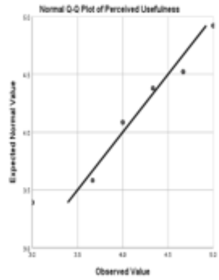
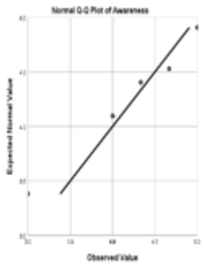
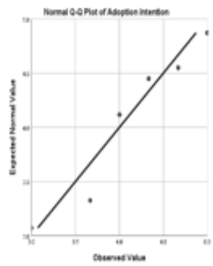
Trialability	Observability	Perceived Usefulness
		
Technology Awareness	Intentional to adopt SHAS	
		

4.2.3 Correlation Result

Pearson's correlation coefficient is required and calculated when determining how weakly, moderately, and strongly every IV and DV are connected. Table 9 shows that at a precision value of 0.05, only three IVs- trialability, perceived usefulness, and technology awareness-are weakly associated with the DV (Schober et al., 2021). Other pairs of IV and DV have no significant correlation. Nevertheless, correlation only shows whether the IV and DV share similar or dissimilar consistent behavioral patterns, and it is not sufficient to measure the change of DV as a result of a change in one unit of specific IV. To confirm the hypothesis, multiple linear regression was conducted.

Table 9

Bivariate Correlation

	RA	Cptb	Complex	Trial	Observ	PU	TA	Int
Relative advantage (RA)								
Pearson Correlation	1	-.122*	.294**	-.018	.169**	.182**	.028	.025
Sig. (2-tailed)		.017	.000	.722	.001	.000	.590	.624
N	384	384	384	384	384	384	384	384
Compatibility								
Pearson Correlation	-.122*	1	-.080	.066	-.060	.055	.046	.060
Sig. (2-tailed)	.017		.118	.198	.240	.286	.368	.242
N	384	384	384	384	384	384	384	384
Complexity								
Pearson Correlation	.294**	-.080	1	-.168**	.084	.120*	-.012	-.030
Sig. (2-tailed)	.000	.118		.001	.101	.019	.810	.554
N	384	384	384	384	384	384	384	384
Trialability								
Pearson Correlation	-.018	.066	-.168**	1	-.052	-.086	.217**	.104*
Sig. (2-tailed)	.722	.198	.001		.308	.091	.000	.041
N	384	384	384	384	384	384	384	384
Observability								
Pearson Correlation	.169**	-.060	.084	-.052	1	.049	.009	.063
Sig. (2-tailed)	.001	.240	.101	.308		.334	.862	.221
N	384	384	384	384	384	384	384	384
Perceived Usefulness (PU)								
Pearson Correlation	.182**	.055	.120*	-.086	.049	1	.038	-.125*
Sig. (2-tailed)	.000	.286	.019	.091	.334		.459	.014
N	384	384	384	384	384	384	384	384
Technology awareness								
Pearson Correlation	.028	.046	-.012	.217**	.009	.038	1	-.118*
Sig. (2-tailed)	.590	.368	.810	.000	.862	.459		.021
N	384	384	384	384	384	384	384	384
Intention to adopt SHAS								
Pearson Correlation	**.025**	**.060**	**-.030**	**.104***	**.063**	**-.125***	**-.118***	1
Sig. (2-tailed)	**.624**	**.242**	**.554**	**.041**	**.221**	**.014**	**.021**	
N	384	384	384	384	384	384	384	384

**. Correlation is significant at the 0.01 level (2-tailed).
Note: RA=Relative advantage, Cptb= Compatibility, Complex = Complexity, Trial = Trialability, Observ = Observability, TA = Technology Awareness, Int = Intention to adopt SHAS

4.2.4 Multiple Linear Regression Result

As discussed in Chapter 3, the stepwise approach is used. In eliciting the significant variables, Model 3 shows that a total of four IVs is excluded from the regression analysis due to their non-significant impact on the DV: relative advantage, compatibility, complexity, and observability (see Table 10).

Table 10

Regression Model: Excluded Variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Relative Advantage	.049[b]	.958	.339	.049	.967	1.034	.967
	Compatibility	.067[b]	1.317	.189	.067	.997	1.003	.997
	Complexity	-.016[b]	-.304	.761	-.016	.986	1.014	.986
	Trialability	.094[b]	1.853	.065	.094	.993	1.008	.993
	Observability	.069[b]	1.358	.175	.069	.998	1.002	.998
	Technology Awareness	-.113[b]	-2.239	.026	-.114	.999	1.001	.999
2	Relative Advantage	.052[c]	1.011	.313	.052	.967	1.035	.966
	Compatibility	.072[c]	1.425	.155	.073	.995	1.005	.995
	Complexity	-.018[c]	-.344	.731	-.018	.985	1.015	.984
	Trialability	.125[c]	2.427	.016	.124	.944	1.059	.944
	Observability	.070[c]	1.381	.168	.071	.998	1.002	.996
3	**Relative Advantage**	**.053[d]**	1.035	.301	.053	.967	1.035	.944
	Compatibility	**.065[d]**	1.283	.200	.066	.991	1.009	.940
	Complexity	**.002[d]**	.042	.966	.002	.960	1.041	.920
	Observability	**.076[d]**	1.517	.130	.078	.995	1.005	.942

a. Dependent Variable: Intention to adopt SHAS

b. Predictors in the Model: (Constant), Perceived Usefulness

c. Predictors in the Model: (Constant), Perceived Usefulness, Technology Awareness

d. Predictors in the Model: (Constant), Perceived Usefulness, Technology Awareness, Trialability

Next, the level of the significant impact of the remaining significant IVs: PU, technology awareness, and trialability is assessed. Table 110 shows that these three significant IVs explain 4.3% change in the intention to adopt SHAS. The remaining 95.7% of the DV change is caused by unexplored variables.

Table 11

Summary of Regression Models

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.125[a]	.016	.013	.46660
2	.169[b]	.028	.023	.46417
3	.208[c]	**.043**	.036	.46122

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a. Predictors: (Constant), Perceived Usefulness
b. Predictors: (Constant), Perceived Usefulness, Technology Awareness
c. Predictors: (Constant), Perceived Usefulness, Technology Awareness, Trialability
d. Dependent Variable: Intention to adopt SHAS

Table 12 affirms that at a precision value of 0.05 for analysis of variance (ANOVA), the three significant IVs create an independent impact on the DV, and at least one of the significant IVs is dramatically related to the DV.

Table 12

Regression Mode's: Analysis of Variance Result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.321	1	1.321	6.065	.014[b]
	Residual	83.169	382	.218		
	Total	84.490	383			
2	Regression	2.401	2	1.200	5.571	.004[c]
	Residual	82.089	381	.215		
	Total	84.490	383			
3	Regression	3.654	3	1.218	5.725	**.001[d]**
	Residual	80.836	380	.213		
	Total	84.490	383			

a. Dependent Variable: Intention to adopt SHAS
b. Predictors: (Constant), Perceived Usefulness
c. Predictors: (Constant), Perceived Usefulness, Technology Awareness
d. Predictors: (Constant), Perceived Usefulness, Technology Awareness, Trialability

In counter-checking that the significant IVs themselves are not highly correlated, another test, namely, multicollinearity, was conducted. Table 13 shows that all IVs' VIFs are below ten (Hair, Anderson, Tatham, & Black, 2006), and this therefore can further justify that all significant IVs are not strongly correlated with each other.

Table 13

Regression Coefficients and VIF Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.982	.216		23.073	.000		
	Perceived Usefulness	-.117	.047	-.125	-2.463	.014	1.000	1.000
2	(Constant)	5.454	.301		18.121	.000		
	Perceived Usefulness	-.113	.047	-.121	-2.389	.017	.999	1.001
	Technology Awareness	-.108	.048	-.113	-2.239	.026	.999	1.001
3	(Constant)	**4.975**	.358		13.888	**.000**		
	Perceived Usefulness	**-.102**	.047	-.109	-2.158	**.032**	.989	**1.011**
	Technology Awareness	**-.134**	.049	-.141	-2.734	**.007**	.950	**1.053**
	Trialability	**.121**	.050	.125	2.427	**.016**	.944	**1.059**

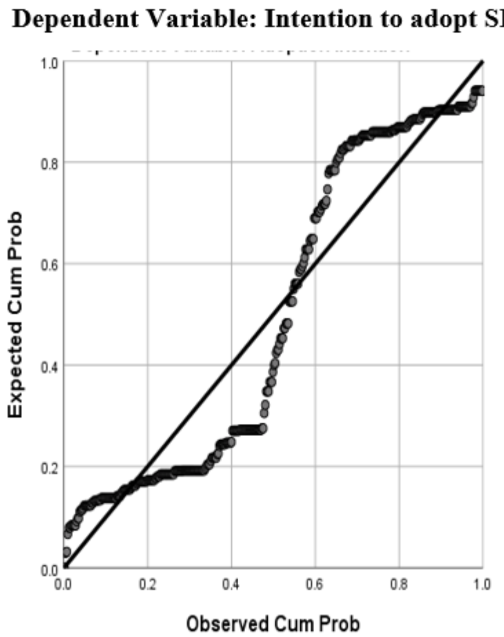
a. Dependent Variable: Intention to adopt SHAS

Finally, to confirm the hypotheses, the regression coefficients shown in Table 13 denote that three hypotheses relate the following IVs: perceived usefulness, technology awareness, and trialability are significantly related to the DV at a precision value of 0.05; or H4, H6, and H7 are supported.

A normal P-P (probability-probability) plot of regression standardized residuals is a diagnostic tool that checks the normality assumption of the regression model's error term, in which the cumulative probabilities of the standardized residuals are compared to the cumulative probabilities of a perfect normal distribution (Tharu, 2019).. As the cumulative effects of all significant IVs are not far from the expected points, then a normality assumption of the linear regression model is met (see Figure 4).

Figure 4

The Normal P-P Plot of Regression Standardized Residual



Based on the results, the final research model of this project is shown in Figure 5.

4.3 Current Research Model

From Table 12, the regression coefficients of each significant variable are used to establish the regression equation 2, see below. The results show that technology awareness has the highest negative impact on the adoption intention, follow by trialability, and PU. The implications of the results are discussed in Chapter 5. Figure 5 displays the research model of this project.

$$Y = 4.975 + (-0.134) X_7 + 0.121 X_4 + (-0.102) X_6 \quad (2)$$

where,

Y = DV, Intention to adopt SHAS

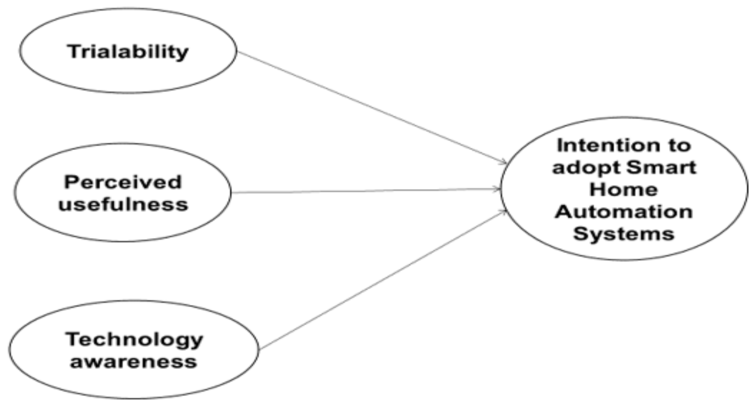
$X_4 = IV_4$ = Trialability

$X_6 = IV_6$ = Perceived Usefulness

$X_7 = IV_7$ = Technology Awareness

Figure 5

Current Developed Research Model



Source: Developed based on the study's statistical findings

4.4 Conclusion of the Statistical Result

After meeting the preliminary statistical requirements (data reliability and normality), Table 13 shows the summary of the confirmation of all hypotheses.

Table 14

Confirmation of Hypothesis Testing Result

Hypothesis statements	Results
H1: The relative advantage of smart home automation systems is related to the adoption intention of Gen-Y in Malaysian.	Not supported
H2: The compatibility of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.	Not supported
H3: The complexity of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.	Not supported
H4: The trialability of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.	Supported
H5: The observability of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.	Not supported
H6: The perceived usefulness of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.	Supported
H7: The technology awareness of smart home automation systems is related to the adoption intention of Gen-Y in Malaysia.	Supported

CHAPTER 5: CONCLUSION AND IMPLICATIONS

5.1 Accomplishment of Research Objectives

In evaluating theimpact level of the five DOI variables on the SHAS adoption intention, the first objective is to test H1 to H5. First, the H1 that relate the RA and the adoption intention is not supported. It suggests that for Gen-Y, the perceived relative advantage of SHAS as compared to conventional home security systems (for example, CCTV and alarm systems), such as energy savings, convenience, or safety improvements, cannot necessarily compensate for the high installation cost and the strength of internet coverage. The result is consistent with the study carried out by Shuhaiber et al. (2023), which found that perceived cost often moderates the impact of relative advantage on smart technology adoption, such as a higher cost undermining the hypothetical impact.

Hypothesis H2 is not supported either, which is inconsistent with Gøthesen et al., (2023) study findings. Not all respondents in this project agreed that the adoption of SHAS is compatible with their life and living environment. Guarded community residential areas (such as condominiums) may not see the importance of installing SHAS compared to non-guarded community residences. Inconsistent responses due to the diversity of home living environments may explain the non-support of H2. This finding aligns with Shahid et al. (2022), who argue that different types of IoT ecosystems can make respondents to view the compatibility measure items differently.

The projected negative relationship between complexity and SHAS adoption intention is not supported (H3). The result is not consistent with other study results that have noted that lower complexity should foster adoption of a technology system (Shaikh and Amin, 2024).. Not all respondents in this project think that complexity in using SHAS is an important factor. They may have foreseen a certain level of complexity in using a new technology. However, the performance of SHAS overrides the effect of complexity. This aligns with Kurniawati and Sunarya (2021), who found that tech-savvy generations are less influenced by complexity and more devoted to evaluating the studied object's outcome-oriented features.

The support of H4 indicates that when they were given more opportunity to experience the performance of SHAS, Gen-Y's adoption intention increases. The significant impact of trialability aligns with the studies conducted by Breimaier et al. (2015) and Mappala and Pasco (2021), which describe that the provision of hands-on experience reduces uncertainty and increases their confidence in the adoption of the study product.

The non-significant impact of observability (H5) aligns with Hubert et al. (2019), who argue that the low visibility of technology in public or peer contexts can decrease their adoption behavior. As the SHAS market in Malaysia is still low, not many users in Malaysia shared their usage experience with their family or social network. Furthermore, the project's target may evaluate the SHAS benefits circulated by their family or social network who live in different countries, areas, or living environments differently. A consistent reaction towards the impact of observability on adoption intention, therefore, is unachievable.

In achieving the second research objective, H6 and H7 tested the influence of the additional variables, PU and technology awareness, on SHAS adoption intention. Both hypotheses are supported and are negatively related to the SHAS adoption intention. This shows that the majority of the respondents don't agree that the increase of PU and technology awareness will increase their adoption intention, and the fact is that the IV and DV are negatively related. Possibly, this is because other possible determinants may have overridden the PU impact. For example, respondents are more eager to adopt SHAS if other concerns of SHAS, such as installation costs, are within their budget and the use of SHAS may not expose them to unprecedented risk (such as electrical short circuit), compared to the publicity of SHAS benefits. This aligns with a study by Manfreda and Mijač (2024), which publicizes that the usefulness of the study object alone does not guarantee adoption if individuals have concerns about perceived risk or affordability.

The significantly negative effect of technology awareness on adoption intention (H7) is an interesting finding too. The result might indicate that the awareness of smart home technologies among Gen-Y might also increase their awareness of perceived drawbacks upon using SHAS. Malfunction, security risks, or complex maintenance could lead to lower adoption intentions of SHAS. This aligns with Zhang and Lin (2022), who argue that high technology awareness sometimes increases people's distrust, especially among digital-savvy users who have devoted a high research effort to the study of products.

5.2 Implications

5.2.1 For Managerial Planning

Our study provides some actionable insights to policymakers for cautious consideration of altering the current rules, regulations, procedures, laws, and policies. From the regression result (see equation 2), technology awareness has the highest impact on motivating the use of SHAS (related to H7). As explained in the previous section, most respondents are more influenced by the drawbacks of SHAS, although they are aware of the existence of such technology and its benefits. This indicates that the government and the SHAS providers ought to elevate the technology awareness of Malaysian Gen-Y towards the SHAS by pragmatically reorganizing their campaigns and demonstrations. They should consider focusing on promoting two-sided messages (highlighting SHAS's benefits and drawbacks), rather than merely focusing on promoting the positive features. As Gen-Y is tech-savvy, the two-sided approach can improve message credibility and effectiveness. The public and private managerial decision makers can release public announcements or arrange awareness campaigns to convince target buyers that users will be notified immediately and can control the functionality features of the SHAS through their smart devices, such as smartphones or smartwatches, even though they are not at their residential area if a malfunction happens.

Attention should be given to the second most impactful variable, trialability, or the support of H4. To increase Gen-Y's adoption intention, managerial decision makers need to find ways to provide a trial opportunity to reduce uncertainty and fear, and enable the target buyers to evaluate SHAS'- performance. The government and SHAS providers can organize campaigns, events, and demonstrations in high traffic locations. The provision of hands-on trial experience for the public to familiarize the SHAS and increase their confidence.

The third most impactful variable is PU. The negative impact of PU on adoption intention shows that other concerns of SHAS, such as high installation costs and the possibility of exposing themselves to unprecedented risk (such as electrical short circuit) upon using SHAS, have overridden the PU of SHAS. To curb this issue, policymakers can simplify SHAS's user interface with user-oriented designs. Besides, they can organize some public campaigns to interpret the synergy of SHAS and clear the negative doubts. Managerial decision makers can formulate new policies to provide financial incentives or subsidies to SHAS adopters and integrate SHAS with other smart devices, such as smartphones or smartwatches.

5.2.2 For Literature

This project provides empirical evidence in the Malaysian context among Gen-Y (with a certain degree of familiarity with digital literacy and knowledge), using the DOI framework, particularly on SHAS. The smart security studies were focused on Western developed countries, where the economic levels, cultural norms, and infrastructures are exogenous factors that affect the adoption intention.

Compared to DOI studies that rarely tested all the DOI's variables, this project examines all five DOI's variables. Furthermore, the current conceptual framework incorporates two additional variables (PU and technology awareness) into the original DOI theory, which increases the theory's explanatory robustness. The PU was tested in the Technology Acceptance Model (TAM) studies and has rarely been examined along with the DOI theory, especially in the SHAS context. Additionally, studies about SHAS rarely take awareness into consideration as a key variable along with the DOI's full theoretical framework and PU.

The non-significant DOI variables are not challenging the DOI framework. Researchers are encouraged to examine why a theory or model is not significant in their study context. A thesis and model establish their propositions to guide future studies to test and modify the existing framework. Future researchers are encouraged to modify our research conceptual model by incorporating other variables and directional relationships between variables that are linked to their research context.

5.3 Study Limitations

A limitation of the project is the non-availability of a sampling frame that could enable us to implement an equal probability sampling to invite the population elements' participation in this survey. Moreover, due to time constraints, the project researchers used a snowball sampling method by inviting the participating respondents to encourage their family, social network, and acquaintances to answer the questionnaire. Undeniable, such a method may have introduced sampling bias as respondents tend to invite others who share similar demographic backgrounds for participation, which reduces the generalizability of the findings.

Using the e-questionnaire distribution posed challenges. While sending out a Google Form survey made data collection convenient and accessible to respondents across different regions, some potential respondents might have overlooked or ignored the survey link we shared, resulting in non-responses. Other than that, no participants have reached out for clarification. Misinterpretations of certain item statements are possible.

A very limited SHAS research manuscript that examined the DOI framework carried out in Malaysia has been published. Comparing the current project's results with research carried out in other countries, especially with different social and living environments, is challenging. Furthermore, the lack of local context studies challenges the project researchers in adapting and modifying measurement items that could better reflect local people's behavior.

5.4 Recommendations for Future Research

To resolve the possibility of having a sampling bias issue, a quota sampling can be cautiously considered if the sampling frame is not available. Quota sampling allows the researchers to choose respondents based on distinct attributes, such as levels of income and residential areas, and this assures that they are acquiring some characteristics that are proportional to the prevalence in the population (Simkus, 2023). After that, researchers can select an appropriate non-probability sampling method to select respondents from each quota. This increases the representativeness of findings to the population.

To reduce the possibilities of having respondents who might misunderstand what items aim to measure, requesting respondents to answer e-questionnaires without the presence of questionnaire facilitators should be minimized. Getting respondents to answer the e-questionnaire during online meetings through Microsoft Teams, Zoom, and social media platforms is recommended. Besides, distributing the questionnaire physically in public spaces such as canteens, restaurants, trains, parks, and streets is another option. Overall, the participants' tendency to ask questions increases when the questionnaire facilitator is present. This can increase the outcomes' precision, which eventually increases the research's trustworthiness.

Finally, the scarcity of existing research on smart home adoption in Malaysia implies that this realm is still being underexplored, especially in Malaysia. Hopefully, more researchers are willing to read this report and contact us for inquiries if they intend to carry out the same research context again.

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Appendices

Appendix 1

Experience the ultimate in-home automation with flexibility, trusted service, and complete transparency.

WPM HOME

WPM Home

Malaysia Leading Smart Home Brand

Appendix 2

imt Smart Products

Door Lock

imt Smart Door Lock 2S 2024

Curtain & Blind

imt Relax Curtain Standard <4m (1 Set) 2024

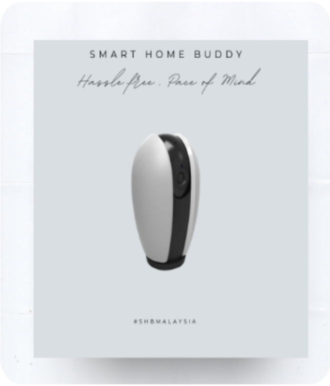
Alarm

imt Alarm Pro 2024

Appendix 3

Products & services of SMART HOME BUDDY

SMART HOME BUDDY offers a wide range of products and services

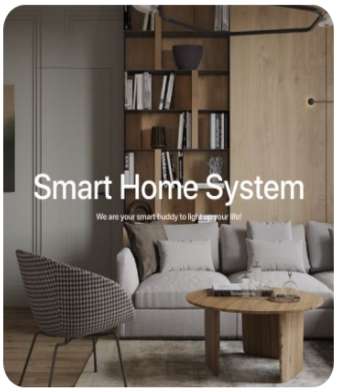


Product

Boose Cam Malaysia, Selangor, Kuala Lumpur...

Product

Mi Robot Vacuum Malaysia, Selangor, Kuala Lumpur...



Product

Package Full House Package Plan Malaysia,...

Appendix 4

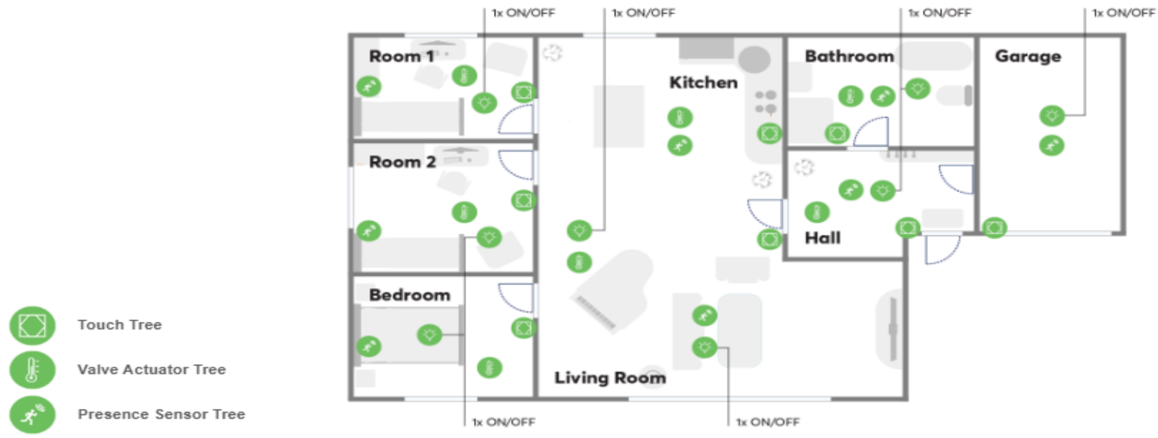
Option 1

Smart

From **RM 10,000**

Make everyday living smarter with impressive features.

Looking to get started with core elements of home automation? Enjoy the benefits of living in a smart home with the Smart option. This package includes a variety of features in the kitchen, master bedroom and bathroom. You have plenty of room for future upgrades.



Appendix 5

Option 2

Premium

From **RM 15,000**

Advanced technology puts your lifestyle front and center.

The Premium option includes everything from the Starter option with additional functionality. Smart features extend throughout the whole house for the luxury of an elevated lifestyle for the whole family. You can, of course, upgrade with additional features in the future.

Appendix 6

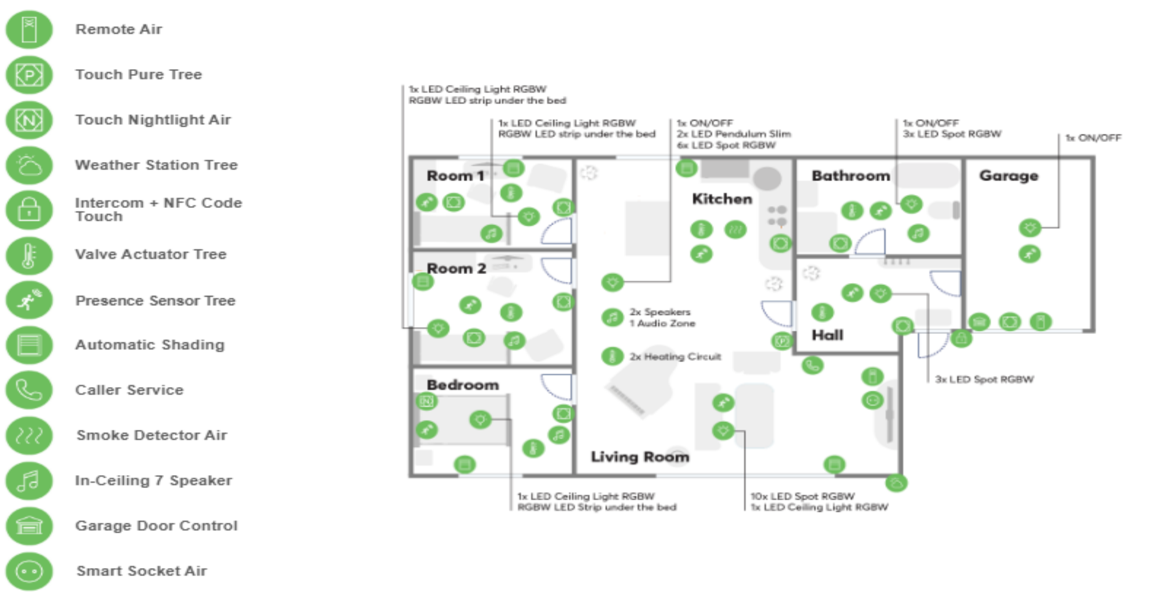
Option 3

Exclusive

From **RM 25,000**

Experience the highest level of all-around living comfort.

The Exclusive option enhances the level of convenience and comfort even more so than the Elevated package. Suited with future-proof automation in all areas, the whole home meets your unique needs and exceeds smart homes as you know them. However, there's still room for upgrades.



Appendix 7 (Questionnaire)

Screening Questions

Please take note of the following text:

1. Are you between 29 and 44 years old? ☐ Yes ☐ No.

If you tick "yes" please answer the second text. If you tick "no", you are not required to participate in this survey. Thank you.

2. Are you aware of smart home automation system? ☐ Yes ☐ No.

3. Have you use smart home automation system in own residential premise?

☐ Yes ☐ No.

If have not used the smart home automation system in own residential premise yet, please proceed to answer the questions in Sections A and B. If you are using or have used the smart home automation system, you are not required to participate in this survey. Thank you.

Section A: Demographic Information

This section collects essential background information from the survey participants which is vital for data analysis.

1. Gender: ☐ Male ☐ Female

2 Age: ☐ 29-33 ☐ 34-38 ☐ 39-44

3. Education Level: ☐ Secondary or below ☐ Diploma & Degree ☐ Master & Doctoral

4. How much is your personal income/allowance level?

☐ Below RM2,000 ☐ RM2,001-RM4,000 ☐ RM4,001-RM6,000 ☐ Above RM6,000

Section B

For each of the following statements, please circle the number using the agreement-disagreement scale which you feel the best to describe the adoption of smart home automation system among Gen Y in Malaysia.

1	2	3	4	5

Strongly Disagree ⟶ Strongly Agree

	Item statement	**Scale numbers**				
IV1: Relative Advantage To increase the adoption intention of smart home automation system among Gen Y in Malaysia, it should equipped with several traits of relative advantage as following:						
RA1	Smart home automation systems have many advantages over conventional home security systems.	**1**	**2**	**3**	**4**	**5**

RA2	Smart home automation systems are more convenient than conventional home systems.	**1**	**2**	**3**	**4**	**5**
RA3	Smart home automation systems enhance the quality of life in a home.	**1**	**2**	**3**	**4**	**5**
						Continue next page

IV2: Compatibility To increase the adoption intention of smart home automation system among Gen Y in Malaysia, it should equipped with several traits of compatibility as following:						
CP1	Smart home automation systems are compatible with every aspect of my life.	**1**	**2**	**3**	**4**	**5**
CP2	Smart home automation systems are compatible with my current living environment.	**1**	**2**	**3**	**4**	**5**
CP3	Smart home automation are compatible with my home.	**1**	**2**	**3**	**4**	**5**
IV3: Complexity To increase the adoption intention of smart home automation system among Gen Y in Malaysia, it should equipped with several traits of low complexity as following:						
CL1	Using smart home automation systems to monitor my home security is convenient for me.	**1**	**2**	**3**	**4**	**5**
CL2	Using smart home automation systems to monitor my home security is easy for me.	**1**	**2**	**3**	**4**	**5**
CL3	I do not need a lot of effort to learn the smart home automation systems.	**1**	**2**	**3**	**4**	**5**
						Continue next page

IV4: Trialability To increase the adoption intention of smart home automation system among Gen Y in Malaysia, it should equipped with several traits of trialability as following:						
TB1	I need to try out and experiment with the smart home automation systems before purchasing.	**1**	**2**	**3**	**4**	**5**
TB2	I need to ask questions about smart home automation systems and get their replies before buying and using them.	**1**	**2**	**3**	**4**	**5**
TB3	The ability to test out the smart home automation systems will increase adoption decisions.	**1**	**2**	**3**	**4**	**5**
IV5: Observability						

OB1	I need to know the benefits of using smart home automation systems from current users.	**1**	**2**	**3**	**4**	**5**
OB2	I need to know that others have used the smart home automation systems before me.	**1**	**2**	**3**	**4**	**5**
OB3	The designs of smart home automation systems should be innovative.	**1**	**2**	**3**	**4**	**5**

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IV6: Perceived Usefulness To increase the adoption intention of smart home automation system among Gen Y in Malaysia, it should equipped with several traits of perceived usefulness as following:						
PU1	I feel that smart home automation systems would enable me to accomplish the monitoring of my home security more quickly.	**1**	**2**	**3**	**4**	**5**
PU2	I feel that using smart home automation systems would make security monitoring tasks easier to do.	**1**	**2**	**3**	**4**	**5**
PU3	Smart home automation systems provide users with real-time or immediate responses that can improve safety and security.	**1**	**2**	**3**	**4**	**5**
IV7: Technology Awareness To increase the adoption intention of smart home automation system among Gen Y in Malaysia, it should equipped with several traits of awareness as following:						
TA1	I am aware of the existance of smart home automation systems.	**1**	**2**	**3**	**4**	**5**
TA2	I am aware that smart home automation systems are open for all classes of individuals.	**1**	**2**	**3**	**4**	**5**
TA3	I am aware about smart home automation systems prevent me from tedious houseworks.	**1**	**2**	**3**	**4**	**5**
DV: Intention to adopt smart home automation system To investigate the adoption intention of smart home automation system among Gen Y in Malaysia, several traits of adoption intention should be taken into consideration.						
DV1	I intend to use smart home automation systems in the future.	**1**	**2**	**3**	**4**	**5**
DV2	Given that there are more smart home automation systems services in the market, I predict that I would intend to use them.	**1**	**2**	**3**	**4**	**5**
DV3	I plan to install smart home automation systems in my residential home in the near future.	**1**	**2**	**3**	**4**	**5**

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY