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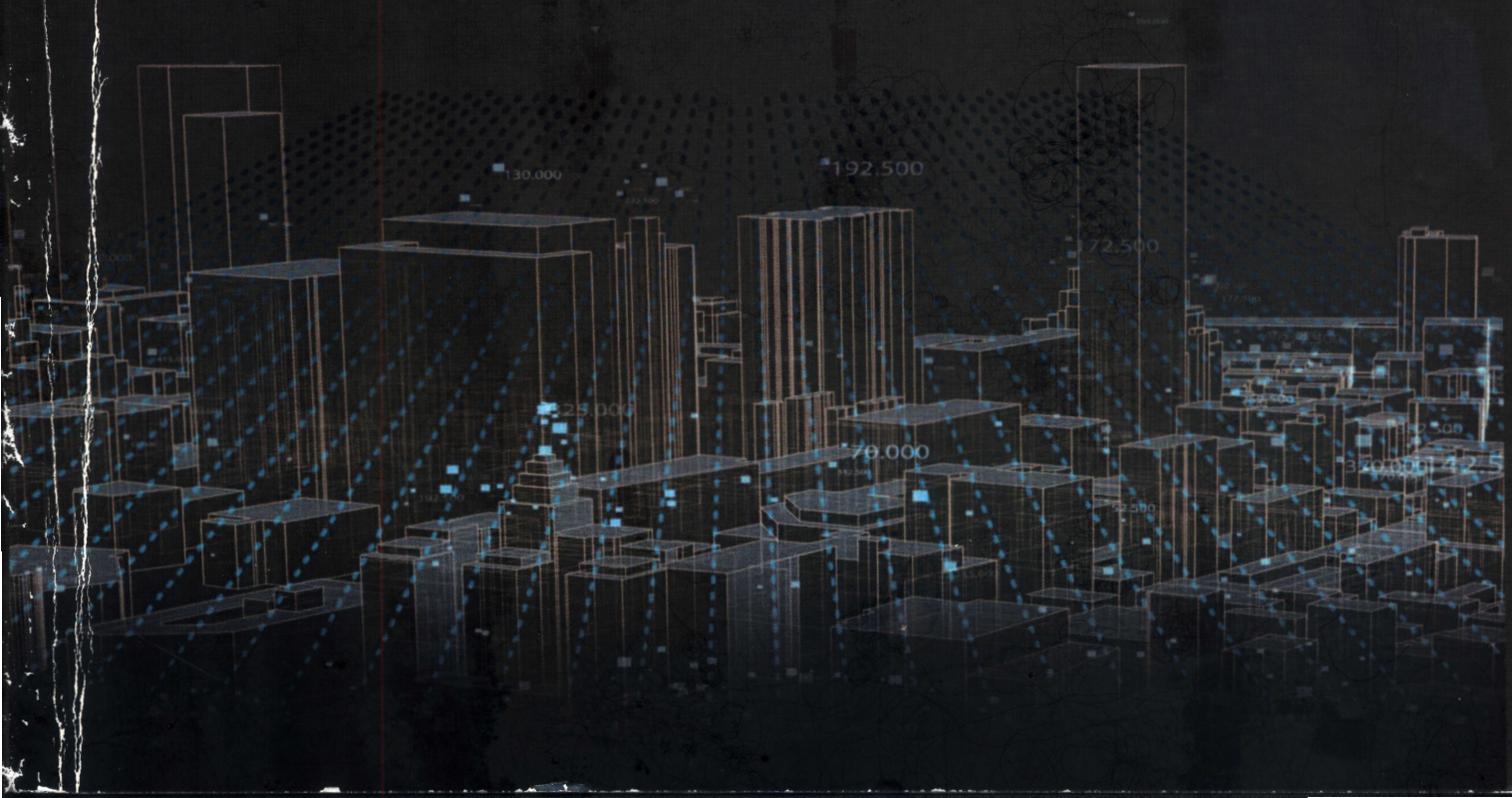
PROPERTY TALK 2021: INDUSTRIAL REVOLUTION 4.0 IN MALAYSIA PROPERTY

HOUSING AND LOCAL GOVERNMENT TRAINING INSTITUTE
UNIVERSITI TEKNOLOGI MARA, PERAK BRANCH
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HOUSE BUYERS PERCEPTION TOWARDS SMART HOME CONCEPT

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Abstract

Smart home concept has been explored for years; however, its proliferation is not yet widespread. Hence, the opportunity has been widely underestimated. This paper aims to identify house buyers' perception towards smart home concept in Malaysia. This research employed quantitative method along the research process, and the results for this paper was collected from 232 respondents which were focusing among groups of house buyers in Klang valley area. The collected data were the analysed. The results show that house buyers were agreed on the smart home concept application in the housing development project. Thus, this research will provide an *opportunity for property developers to expand the smart home concept into a new housing development projects in enhancing the quality of life.*

Keywords: Smart home, Housing, House buyer

1.0 INTRODUCTION

A worldwide consumer electronics and technology trade show (CES) in year 2016 introduced the 'smart home' concept as a modern living space for today (Kim et al., 2017). In addition, Kim et al., (2017) stated smart homes or homes that use ICT (information and communication technology) to communicate and integrate various household devices have shown to be more effective in handling household tasks and to protect human lives and property from harm such as accident, flooding and crime. A smart home, for example, can manage temperature, windshield and door functions, safety, lighting, video recording, and other systems as well. The concept involves many advanced systems, during which the system can control and manage the house environment intelligently to achieve remote home control. By applying a single order, consumers can monitor an automated home's equipment from anywhere within the world (Wahab et al., 2018).

However, some of the features of smart home systems may not fit Malaysian lifestyle choices, as the system is mainly from Countries in the west. For instance, heater functionality in Malaysia is not so useful but it is well accepted by western countries users (Ong et al., 2003).

According to previous research, Malaysians know very little about the status of smart home adoption although they have identified the advantages of smart home adoption (Wahab et al., 2018). In addition, Malaysians still have limited awareness and understanding about the smart homes, and are unclear about how the smart homes technology operates. They do not know the smart home actually has offers significant benefits and enhances their quality of life. So, the goal of this study is therefore to focusing on the house buyers perception towards the smart homes concept in Malaysia.

2.0 LITERATURE REVIEW

2.1 Smart Home

Smart home is a home that is a well-designed building with adequate connection to properties, monitors, information systems, data, and communication to improve the quality of life of the residents through luxury, cost savings, comfort, and improved communication (Harper, 2003). A smart home helps to obtain and implement information about the world and its occupants to enhance their experience in the community (Cook and Das, 2007). In addition, smart home is developed to meet the needs of users who can be considered as part of the functional, ideal structural, acknowledgment and psychological effects of technology activity and how the technology meets the daily activities of the user (Matthews et al., 2010).

2.2   Features of Smart Home

According to Kadam (2015), precise definition and simple as "the improve quality of life through the home network". Meanwhile, Technology is one of smart home's main features (Yang et a., 2018). Since innovation in Artificial Intelligence (AI) has provided for advanced automation in recent years, AI technology can improve smart functions by intelligently assisting users' house (Solanki et al., 2016). Table 1 below presents key features of smart home.

Table 1: Presents Key Features of Smart Home

Key Features for Smart Homes
• It can improve family life convenience, health, comfort, and engagement, and improve lifestyle for people.
• It can implement the reading of real-time meter and water meter protection services, meters of electrical energy and meters of gas to offer more comfortable conditions for standard services.
• It can track and communicate with family members by mobile device, phone, and cell phone, identify and deal with anomalies in time.
• It can support online transaction.
• It can support the business of "triple network" and complete smart services.
• It can realize the relationship between consumers and grid companies, obtain information on electricity usage and the price of electricity, devise power consumption strategies and so on, direct research and rational energy use, and enhance family to have protection of the environment and knowledge of saving energy.

Source: (Chan et al., 2009)

2.3   Concept of Smart Home

There are 3 components consists in smart home concept such as the network of internal and external and the gateway of residential. The network of internal which included the network of wired and wireless; the network of external included Internet and provider of the internet services; while the gateway of the residential is very important and it is the device of connected in a smart home and the bridging for the network of internal and the world of outside (Mantas et al., 2010).

2.4   Benefits of Smart Homes for Users

Rosslin et al., (2010) stated smart home is clearly capable of making life simpler and more comfortable. Nonetheless, networking at home will also help you feel better because smart home will remind you what happened whether you are on travel or at work. Some research stated that consumers can work effectively to efficiently monitor all significant energy flows of residential in a proper-time frame, manufacturing elements and storage while adequately respecting the comfort level and the needs of the customers (Graditi et al., 2015; Jiang and Fei, 2015). Table 2 presents categorization and benefit of smart homes for users.

2.5   Smart Home Application

Smart home results in a household whose devices is intelligent enough to produce data from individuals and their living situation and use the data gathered to higher serve individuals (Wang et al., 2013). Smart device technology allows smart homes to have spacious spaces of living for residents (Ghaffarianhoseini et al., 2016). The smart homes devices can be categorized into two groups which is devices of passive and active. Table 3 presents the smart home devices.

Table 3: Smart Homes Devices

Categorization	Benefit
Comfort	• Smart home services use by managing unattended household appliances often automate power usage by using the human behavior and activity knowledge as the house is smart sufficiently reduce power (Alam et al., 2012).
Health	• The health programs can be incorporated on-site as an alternative method for producing data on local health. Moreover, delivering emergency assistance by using a telemedicine service provider is one of the efficient method (Alam et al., 2012).
Healthcare	• The health status, attitudes and habits of the patient can be automatically monitored and detected by the installed smart device in the smart home using the following approaches (Fahad et al, 2015).
Security	• Safety devices can indeed be designed to provide a great deal of assistance in emergencies. For instance, homeowners will receive alerts of smoke detectors, and smart homes will also open doors, activate fire services and open roads to escape (Rosslin and Tai, 2010).
Elderly	• Smart home technology is supposed to offer significant benefits to the senior citizens who are living alone. The occupants will get alert by smart home at the medication time when they need to take, monitor their diet, and it can inform residents of falls when they are sick (Rosslin & Tai, 2010).
Environmental	• Smart home environment currently are expected to minimize the building's environmental effects by urge the smart devices (Ghaffaianhoseini, 2016).

Energy Efficiency	• Smart homes will save the energy usage. Since systems such as ZigBee and Z-Wave which can reduce the functionality of some devices, the devices will enter a "sleep" state and wake up after given a command and escape (Rosslin and Tai, 2010)..

3.0 RESEARCH METHODOLOGY

This research adopted the quantitative method along the research process. The results of this research were based on the survey conducted among 232 respondents who were groups of house buyers within Klang Valley, Selangor area. As the questionnaires are used for this study, considered the most appropriate technique to determine the perception of house buyers towards smart homes concept. The collected data were then was analyzed by Microsoft Excel and Statistical Product and Services Solution version 26.

4.0 RESULTS AND DISCUSSION

4.1 Response Rate and Respondents' Profile

From 384 questionnaires distributed to the house buyers, 232 were returned and this resulted in a total of 60.4% useable response rate and was considered as a high response rate. Based on the data, it appears that the range of the respondents represented in the sample is similar; they are potential house buyers in real estate industry in Malaysia and the case study area, respectively. From the results, almost 50% respondents were matured people with age ranges in between 35 to 45 years old. More than 50% were graduated from the university with monthly income below RM 5 000.00.

4.2 Perception of House Buyers towards Smart Homes Concept

From the results, almost half (49.6%) of house buyers have experiences on smart home system, and majority of them are interested to implement or to invest in smart home concept for their future investment in property. Furthermore, the perception of house buyers towards smart homes concept were determined through the assessment of six indicators namely effectiveness, privacy and security, attitude, cost, intention to use and ease of use. The result shows that the highest acceptance level by house buyers is on the effectiveness of smart home concept. The word effectiveness has similar meaning with words such as usefulness, appropriateness or fit. Neumann (2018) stated that individuals value effectiveness more than any other variable. Apparently, users will not use or accept the smart home technology before they are certain on its effectiveness. Home buyers are also concern on its attitude.

Different research structures have stated that attitude is a significant precedent for the intention to participate in a specific behaviour (Yang et al., 2004). Moreover, ease of use is indicated as a factor which influences home buyers' high acceptance level. According to Balta-Ozkan et al., (2013, 2014), the main and leading structure in predicting how well consumers can adopt, accept or reject new technologies depends on the perceptions of ease of use and perceptions of effectiveness. Since this study chose to take the forms filled by the respondents who knew about the smart home concept and the majority respondents were interested in smart home concept, most of the respondents have the intention to use the smart home concept. In addition, the research also figured out that the household adoption level in Malaysia is estimated to increase by 2023 (The Star Online, 2019).

Other than privacy and security indicator which is determined as a reason not to purchase such types of smart home technology, cost has also been reported as an important factor in determining whether to adopt smart home technology or not (Hidayati, 2018). Cost proves to be important, but if people consider smart technology as more useful, it might not be an issue (Neumann, 2018). However, in this research, since most respondents in this survey were millennial (25 – 35 years old) with high monthly income and hold university degree or diploma, they are more inclined to have the financial capacity without having to think about the cost to purchase, maintain and use the smart home technology (Kim et al., 2017).

5.0 CONCLUSION

The development of technology like smart homes can make one's life more convenient and comfortable. The benefit of a smart home is that the quality of life can be improved. In conclusion, it is imperative for the relevant authorities especially the government, real estate industry and academics to demonstrate and lead towards achieving the acceptance level needed and strengthening the main variables of smart homes concept throughout Malaysia in order to enhance the quality of local and international real estate market.

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