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Factors Influencing the Intention to Adopt Smart Home Technology among Households in Johor Bahru, Malaysia

[1]Lau, Jia Sing, [1]Lau, Jasmine Leby & [2]Harun, Zubaidah

[1]Department of Resource Management & Consumer Studies, Faculty of Human Ecology, Universiti Putra Malaysia, Serdang, Selangor, [2]Department of Wood & Fiber Industries, Faculty of Forestry & Environment, Universiti Putra Malaysia, Serdang, Selangor

Corresponding Author's Email: jasminelau@upm.edu.my

Abstract

Although household penetration of smart appliances in Malaysia is second in Southeast Asia, the adoption rate is critically low compared other Asian counterparts. Hence, the main purpose of this study was to investigate the factors that influence intention to adopt smart home technology among urban household in Johor Bahru, Malaysia. Contributing to an expanding literature on smart home, this study examined the relationship between three determinant variables namely economic performance, environmental concern, and attitude toward technical performance and intention to adopt smart home technology. In addition, this study also aimed to determine factors that significantly influence intention to adopt smart home technology. Correlation analyses with a sample of B40 and T20 urban households (n = 120) from Johor Bahru shown that all three determinant factors were positively correlated with intention to adopt smart home technology. Multiple regression results revealed that attitude toward technical performance has the most effect on adoption intention, followed by economic performance. However, environmental concern did not significantly predict intention to adopt smart home technology. It is suggested that companies should focus on developing a positive attitude among potential consumers as well as emphasising on ease of use and benefits that smart home technology could bring to their life.

Keywords: Attitude Toward Technical Performance, Economic Performance, Environmental Concern, Urban Households, Multiple Regression.

Introduction

Smart home is a type of house equipped with communication network, high- tech household devices, appliances, and sensors which can be remotely retrieved, monitored, and controlled (Yang et al., 2018). it is often used interchangeably with terms such as electronic homes, digital homes, home automatic, domotics and connected homes (Li et al., 2021). Del Rio et al (2020) identified 13 categories of smart home technology which are safety and security, household appliances, baby and pet monitors, home robots, gardening, energy and utilities, lighting, entertainment, health and wellness, clothes and accessories, vehicles and drones, integrated solutions, and "others. Smart home is an eco-friendly product which help to control energy

use and reduce carbon footprint (Marikyan, Papagiannidis & Alamanos, 2019). It provides energy efficiency in terms of lower electric bills as lights are automatically turned off when a person leaves the room (Ji & Chan, 2019). In addition, it also facilitates energy consumption either by providing new services that pre-heat homes or run automated security routines while absent (Wilson et al., 2017). According to Zhou et al (2016); Karlin et al (2015); Ford et al (2017), smart home technologies may help household achieves energy management goals in two ways. First, it provides information about the energy consumption that households had used. Subsequently it may help the households train their energy saving behaviours. Furthermore, it also provides households on the ability to the domestic appliances via smart devices, so that they can utilise some electricity policies to cut their energy bills. Balta-Ozkan et al (2014) identified economic performance as one of the factors that drew consumers in the United Kingdom, Germany and Italy to buy smart home technology.

Apart from energy management, smart home technology possesses both hardware and software design that is environmental friendly (Rio et al., 2021). This help to lower the environmental impact of the homes that we live in today (Yeon et al., 2017) especially when the world is having environmental problems such as water shortages, ozone depletion, and global warming (Kilbourne & Pickett, 2008). Aliero et al (2021) stated that the generation of electricity from all sources of primary energy has effects on the environment to some extent. Renewable energy sources by smart home technologies are the natural process of generating energy restored by means of the earth. The current adaptation and growth of smart grid have subjected building sectors into continuously seeking and demanding for new emerging algorithms and technologies to facilitate and ensure smooth transition of shifting home appliances from traditional utility grids to renewable energy sources to curb the current energy crisis and global warming (Luo et al., 2016). Shill et al (2019) stated that consumer environmental concern has a direct relationship on the smart home technology purchase intention and therefore suggested that future study could focus on this relationship particularly in different countries. Reason being, culture may have influence on environmental concern and thus affect consumers' intention to adopt smart home technology.

Despite the benefits of smart home, it has problem reaching the mass population. The statistics of household penetration rate towards the smart home appliances in Malaysia is merely 4.6%, which is much lower compared to other countries in Asia such as China and Singapore with a rate of 6.5% and 11.3%, respectively (Statista, 2021). This is due to low willingness among Malaysians to adopt smart home technology or any similar internet of things (IoT) (Salimon, Gorundutse & Abdullah, 2018). Having said this, household penetration of smart appliance in Malaysia is the second highest in Southeast Asia (SEA) (Statista, 2021). Even though Malaysia has the second highest penetration of smart appliances among SEA countries, compared to Singapore which has the highest penetration, Malaysia still has a very low penetration of smart home appliances (Statista, 2021).

Salimon et al (2018) stated that most of the previous studies about smart home technology adoption are from western countries. There are very limited studies about the adoption of smart home technology in developing countries particularly in Malaysia (Gao and Bai, 2014; Yau et al., 2016; Al-Momani et al., 2016). For instance, Wong and Leung (2016) carried out a

study on the perception of elderly or senior citizens toward smart technology while Mokhtar and Ismail (2018) focused on working adults in Hulu Langat, Selangor. Thus, this study aims to contribute by examining the influence of economic performance, environmental concern and attitude toward technical performance on adoption intention of smart home technology among urban households in Johor Bahru.

The structure of this paper is as follows. Section 2 presented the relevant literature and the development of hypotheses used in the study. Section 3 explains the methodology and data analysis for this study. Section 4 presents the results while Section 5 discusses and concludes the paper.

Literature Review and Hypotheses Development

Behavioural Intention

Behavioural intention refers to an individual's motivation and readiness to perform a behaviour, which encompasses both direction (e.g. perform or not to perform) and intensity (e.g. how hard a person is willing to try and how much effort he or she is prepare to exert) (Ajzen, 1985, 1991; Armitage and Conner, 2001; Sheeran, 2002). Although there is no perfect relationship between behavioural intention and actual behaviour, intention can be used as a proxy measure of behaviour (Perria et al., 2020). However, for a strong association between attention and behaviour, three conditions have to be met (Ajzen, 1985; Ajzen, 1991). The first condition is that the measure of all behavioural antecedents (attitudes, norms and intention) and the behavioural criterion must be of the same levels of abstraction, in terms of specificity of generality. Incompatibility in measurement is one of the reasons attributed to weak or non-existence relationship between general environmental concern and conservation behaviours like recycling (Derksen & Gartrell, 1993; Oskamp, et al., 1991). The second pre-requisite to fulfil is the stability of intentions between time of measurement and the behaviour is observed. It is crucial that intentions must not have changed and must reflect those of individuals' as they exist before the performance of the behaviour. Thus, the predictive accuracy of intention tends to inversely related to the time interval (Davies et al., 2002). The third requirement is that the target behaviour must be under volitional control that is an individual has a good deal of control of the behaviour and is able to decide at will whether to perform or not perform it.

Economic Performance

Economic performance of smart home technology focuses mainly on cost effectiveness and energy efficiency, which helped to save energy expense and reduce maintenance cost (Ji & Chan, 2019). These advantages become the key drive for people to adopt smart home technology (Balta-Ozkan et al., 2014). For instance, Zanocco, Flora, Ragopal and Boudet (2021) found that households that reported higher changes in frequency of energy activities expressed greater intention to adopt smart technologies. This is particularly evident in families with children since the demand for electricity is higher at different times of the day. In the similar vein, Iwata et al (2015); Bhati et al (2017) indicated that households are positive towards using smart technologies to lower energy bills at home. Nonetheless, Ji & Chan (2019) discovered that favourable attitude towards economic performance demonstrated by

respondents in Guangdong, China did not lead to adoption of smart home energy technology. Based on the above discussions, the following hypothesis is derived:

H1. *There is a significant relationship between economic performance and intention to adopt smart home technology.*

Environmental Concern

Environmental concern is the extent to which individuals are concerned about the negative effects of their consumption actionson the natural environment (Barbarossa et al., 2017). It is defined as the overall care for the preservation of the natural world and concern for the depletion of its resources (Bamberg, 2003; Moons et al., 2018). Consumers may purchase products based on the extent to which they care about the impact of current consumption lifestyles on the natural environment (Bamberg and Moser, 2007; Barbarossa et al., 2017). Similar to the concept of perceived consumer effectiveness for environmental issues (Ellen et al., 1991), consumer environmental concern has a significant direct effect on eco smart home product purchase intentions. Schill et al (2019) stated that consumers do recognise smart home objects as eco-friendly solutions where regression analysis proved that environmental concern enhanced smart home object purchase intentions. In their study, 95% of the French respondents indicated that protection of the environment is important to them and 76% of them believed that environmental issues directly affect their daily life, with climate change and air pollution being the most important environmental issues. Thus, the more consumers care for the natural environment, the more they are willing to purchase eco smart home products. In line with past literature, we postulate that

H2: *There is a significant relationship between environmental concern and intention to adopt smart home technology.*

Attitude toward Technical Performance

Attitude toward technical performance is the consumer's satisfaction with the technical aspect such as the functional and operational features of the smart home technology. Wilson et al (2017) emphasised that the clear value propositions of smart home technologies are control and convenience. Thus, it was an important factor influencing the adoption of smart home technology (Wong & Leung, 2016) as consumers' perception of a mature technology would determine one's willingness to use a smart appliance (Mert & Tritthart, 2018). Ji and Chan (2019) mentioned that residents who have favourable attitudes towards the technical performances or functions will be more likely to purchase smart home products. Their study shown that technical performance is the highest factor that drives consumers to intent on smart home products. Similarly, Salimon et al (2018) illustrated that the use of rear variables such as mobility and automation greatly encourage consumers to adopt smart home technology. Furthermore, Yang et al (2018) also discovered that perceived control was a significant factor influencing adoption intention. While convenience of life is an element of the attitudes toward technical performance of smart home product, Mokhtar and Ismail (2018) reported merely 4.9% of respondents were likely to incorporate smart technology features into their homes due to this factor. Consistent with the above literature, we posit that:

H3: *There is a significant relationship between attitude toward technical performance and intention to adopt smart home technology.*

In the context of this study, we also conjecture that all three determinant factors influence intention to adopt smart home technology amongst households in Johor Bahru, Malaysia, as per the following hypothesis

H4: *Economic performance, environmental concern and attitude toward technical performance significantly predict intention to adopt smart technology.*

Method

Data Collection Procedures

Smart home development and adoption is a relatively new trend in Malaysia. Due to its high cost, smart home technology mainly attracts middle- and high-income urban households (Mokhtar & Ismail, 2018). This is supported by Zanocco et al (2021) who stated that higher income households have greater intention to adopt smart home technology. Therefore, the capital of Johor namely Johor Bahru has been chosen as the research location for this study. It is in the Iskandar region and is one of the urban areas that currently has several smart home development projects underway (Rasyidah et al., 2020).

A web-based survey was developed to collect data from M40 and T20 households in Johor Bahru. M40 are further divided into four categories namely M1 to M4 while T20 is divided into T1 and T2 (Bernama, 2020). Sample size was determined using Green's (1991) procedure where he suggests N > 104 + m (where m is the number of IVs) for testing individual predictors in regression analysis. With three predictors, the sample size needed for this study is 107. Prior to distributing the questionnaire, it was piloted by 15 respondents. The main purpose of this process is to develop quality questions and to avoid ambiguity when answering them. The finalised version of the survey was then distributed to 120 respondents who were conveniently recruited through social media (Facebook). There were no incentives given and respondents were assured that their personal information would be kept strictly confidential.

Instrument and Measurement

Items for measuring the concepts were adopted from previously validated studies (See Appendix). The measurement of all the concepts were taken from several past studies. Each item was being measured on a 5-point likert scale (1 = *strongly disagree*; 5 = *strongly agree*). All scales exhibited good Cronbach's alpha coefficient except economic performance. The coefficient alpha for this scale was below acceptable level during pilot study but has improved to 0.781 after dropping item number 8. The reliability coefficients for all measurement are shown in Table 1 below. Apart from this, the study also collected socio-demographic data from respondents such as gender, age, race and household income. Descriptive, Pearson correlation and multiple regression analyses were used to analyse the data and to answer research objectives.

Table 1
Cronbach's Alpha for Pilot and Actual Study

Variables	No. of items for pilot test	Cronbach's Alpha for pilot test	No. of items for actual study	Cronbach's Alpha for actual study
Intention to Adopt Smart Home Home Technology	8	0.891	8	0.870
Economic Performance	8	0.684	7	0.781
Environmental Concern	8	0.840	8	0.858
Attitude Toward Technical Performance	8	0.899	8	0.913

Results

Table 2 below presented the demographic background of 120 respondents that participated in this study.

Table 2
Demographic Background of Respondents (n=120)

Items	Number of Respondent	Percentage (%)
Gender		
Female	93	77.5
Male	27	22.5
Age		
18-25	57	47.5
26-34	37	30.8
35-43	24	20.0
43 and above	2	1.6
Race		
Malay	46	38.3
Chinese	59	49.2
Indian	14	11.7
Others	1	0.8
Household Income		
RM 4,850 – RM 5,879 (M1)	46	38.3
RM 5,880 – RM 7,099 (M2)	23	19.2
RM 7,110 – RM 8,699 (M3)	21	17.5
RM 8,700 – RM 10,959 (M4)	10	8.3
RM 10,960 – RM 15,039 (T1)	12	10.0
RM 15,040 and above (T2)	8	6.7

The sample consists of 73 (77.5%) female and merely 27 (22.5%) male respondents. Most participants were between 18 and 25 years old (47.5%), followed by the group of 26 to 34 years old (30.8%). Majority of them were Chinese (49.2%) and Malay respondents (38.3%). The sample in this study was households who are in the M40 and T20 groups, which could be divided into several subcategories based on their incomes namely M1, M2, M3, M4, T1 and T2. The household income group with the most participants were those from M1 (38.3%) followed by households from M2 (19.2%) and M3 (17.5%) groups.

Table 3 shows the means, standard deviations and Pearson's correlation of all variables. Intention to adopt smart home technology was significantly correlated with all three determinants (r*s* = 0.48-0.53, p*s* < 0.01). In addition, all determinant variables are positively intercorrelated with coefficient between 0.42 and 0.55 (*p* < 0.01).

Table 3
Correlation matrix, mean and standard deviation

Variable	M	SD	1	2	3	4
1. Economic Performance	3.89			0.48**	0.53**	0.50**
2. Environmental Concern	4.02				0.46**	0.42**
3. Attitude toward Technical Performance	4.34					0.55**
4. Intention to Adopt Smart Home Technology	4.17					

Note: **$p < 0.01$

Table 4 shows the regression results for this study. The R square of this study was 0.378, which means all three determinant variables explain 37.8% of the variability of intention to adopt smart home technology. The value F in this study was 23.546 with significant $p < 0.01$ indicating the independent variables in this study significantly predict the dependent variable. Among the three determinant variables, attitude toward technical performance had the highest value of standardized coefficients beta (β) of 0.361 among the three independent variables. This means that for every 1 unit increase in attitude toward technical performance, the intention to adopt smart home technology among urban household will increase by 0.361 units. Thus, attitude toward technical performance posed the strongest influence toward intention to adopt smart home technology. Economic performance is the next significant predictor with a β value of 0.252 ($p < 0.001$) while environmental concern did not significantly predict intention to adopt smart home technology (β = 0.127 $p = 0.148$).

Table 4
Multiple Linear Regression

	Unstandardized (B)	Standardized Coefficients Beta (β)	Beta (t)	p- value
(Constant)	1.086		2.920	0.004
Economic Performance	0.252	0.252	2.780	0.006*

Environmental Concern	0.121	0.127	1.455	0.148
Attitude toward Technical Performance	0.372	0.361	4.025	0.000**

Note: Dependent variable=Intention to adopt smart home technology,
R Square=.0378, F=23.546, *$p < 0.01$, **$p < 0.001$
The multiple linear regression equation is presented as below: Intention=1.086 + 0.252EP + 0.372ATP

The intercept showed above is 1.086 and the equations also showed the coefficient for economic performance (EP) and attitude toward performance (ATP) in percentage of 25.2% and 37.2% respectively. Given that all other variables were constant, the coefficient indicated that for every single additional unit in economic performance and attitude toward performance will resulted in intention to adopt smart home technology by an average 25.2% and 37.2% respectively.

The summary of hypothesis testing is presented in Table 5. Hypotheses 1, 2 and 3 were supported as intention to adopt smart home technology has moderate positive correlations with economic performance, environmental concern and attitude toward performance. Hypothesis 4 was partially supported since environmental concern did not significantly predict intention to adopt smart home technology.

Table 5
Result for Hypothesis Testing

Hypothesis	Analysis Method	Results	Decision
There is a significant relationship between economic performance and intention to adopt smart home technology.	Pearson Correlation Coefficient	r = 0.50, $p < 0.001$	Supported
There is significant relationship between environmental concern and intention to adopt smart home technology.	Pearson Correlation Coefficient	r = 0.42, $p < 0.001$	Supported
There is significant relationship between attitude toward technical performance and intention to adopt smart home technology.	Pearson Correlation Coefficient	r = 0.55, $p < 0.001$	Supported

Economic performance, environmental concern, and attitude toward smart home technology significantly predict intention to adopt smart home technology.	Multiple Linear Regression	Economic Performance $\beta = 0.252$, $p < 0.01$ Environmental Concern $\beta = 0.127$, $p = 0.148$ Attitude toward Technical Performance $\beta = 0.361$, $p < 0.001$	Partially Supported

Discussion

This paper aims to identify the factors that influence smart home technology adoption among urban households in Johor Bahru. The findings of the study revealed that, among the three determinants, attitude toward performance had the strongest effect on households' intention to adopt smart home technology. Economic performance was another significant predictor of intention to adopt smart home technology while environmental concern had not significant effect on intention.

Attitude toward technical performance refers to consumer's beliefs that the technical function and the operation of the smart home technology are user-friendly and convenience to use (Wong & Leung, 2016; Wilson et al., 2017). This implies that the quest to inculcate an adoption intention among households, companies must focus on developing a positive attitude. The concept of smart home promises ease, safety and comfort to modern living. Acceptability of smart homes relies on the potential users' perception towards its benefits and concerns related to monitoring. Thus, brands need to make a clear connection between the technology and the benefits to consumers in order to encourage the adoption of smart homes. In addition, ease of use of the technology could be another important selling point that needs to be emphasised particularly for consumers who are in the advanced age categories. As outlined by Yang et al (2018), perceived controllability was the purpose consumers adopt smart home technology. Users prefer devices of a smart home that could be controlled remotely using a smartphone or tablet. If consumers do not find a smart device useful, it is deemed to have low value and thus creates a negative attitude. Therefore, companies need to highlight on smart home technology's usefulness via advertising and brand awareness so to create positive image and increase consumer uptake.

At the same time, economic performance should also be portrayed. Energy management strategies play a key role in performance and economy of smart homes. Many technologies aim to increase comfort while disregard concerns for costs. Consumers that are not aware of possible benefits of lower energy expense and maintenance cost tend to shy aware from considering smart home technology. Accenture (2014) mentioned cost as the prime factor for consumer resistance toward smart home technology. Smart home technology is a combination of information technology, personal computing and internet technology and thus economic risk is very relevant. In view of this, engineering companies should focus on reducing the costs incurred in acquiring, using and maintaining the technology. If consumer

believes that smart home technology is too costly and technically complex, this could prevent mass-market adoption.

While environmental concern was positively correlated with adoption intention, it did not significantly predict the outcome variable. A possible explanation for this is that consumers did not recognize smart home technology as eco-friendly solution to current environmental problems. This could be related to the way smart home products was advertised where companies tend to focus on utilitarian benefits (e.g. cost and energy savings) that these innovative products may bring to consumers, which also explained the significance contribution of consumer emphasis on technical and economic performance of smart technology in the regression analysis. Another possible is the mismatch between beliefs and behaviour termed the value-action gap where consumers' concern for environment do not autumnally yield the respective pro-environmental act due to consumer-related variables such as personality and company related variables such as skepticism toward the eco-label.

Conclusion & Future Direction

The primary purpose of this study was to investigate the factors that influence intention to adopt smart home technology among urban household in Johor Bahru, Malaysia. Based on the demographic background analysis, most of the respondents were between 18 years old to 34 years old which are the young adult group. Besides, most of the respondents were from RM 4,850 to RM 5,879 household income group. From the descriptive analysis from this study, the highest was attitude toward technical performance which has 4.34 mean score. It means that many of the respondents agreed that attitude toward technical performance of smart home technology was truth. Based on Peason's correlations, it is found that economic performance, environmental concern and attitude toward performance were positively related with intention to adopt smart home technology. In addition, the result from multiple linear regression shown that attitude toward technical performance and economic performance were two significant factors that influence intention to adopt smart home technology among urban households. Technology plays a key role in home automation. In order to encourage consumers to adopt the technology, smart appliance needs to be convenience and easy to navigate. Consumers who possess positive attitude toward the technical performance of smart appliances tend to have stronger intention to adopt the technology. Apart from this, the performance of smart home technology must be satisfactory in terms of security, comfort and energy efficiency to ensure wide market adoption.

In this study, we limited out data collection to urban areas in Johor Bahru, hence our results may not represent other urban households in other states of Malaysia. Moreover, the use of convenience sampling method also restricts generalisability of the findings. However, despite the limitations mentioned, convenience sampling is chosen due to its advantages of being inexpensive, fast and efficient (Sekaran, 2003), particularly during the Covid-19 outbreak. Next, we did not consider demographic characteristics in our study. Future study could consider risk factors of smart home adoption as these could pose uncertainty, discomfort and anxiety due to the unpredictable nature of intelligent applications (Li et al., 2021; Hubert et al., 2019). Finally, the scope of the study could be extended to include subjective norm as one of the factors that influence households' intention to adopt smart home technology. As a

matter of fact, intention to adopt smart home technology is not only function of the product; it can also be influenced by people around them. Subjective norms are a function of beliefs in which social referents pressurize or influence people's intentions to buy smart homes. Spouses, colleagues and people who are important in daily life are those who can have great influence on an individual's decision making (Mohamad et al., 2019). In previous study, it showed that subjective norm had a positive significant influence on intention to purchase affordable eco-friendly smart houses (Doran & Larsen, 2015) and therefore it is believed that the same could apply to intention to adopt smart technology.

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Appendix

Items for Intention to Adopt Smart Home Technology

No.	Item	Source
1.	Using smart home technology is worthwhile.	Yang, Lee & Lee (2018)
2.	I intend to use smart home technology in the future.	Yang, Lee & Lee (2018)
3.	I'm interested in purchasing eco-friendly smart home technology.	Schill et al (2019)
4.	I would like to know more about smart home technology.	Schill et al (2019)
5.	I feel happy if I have the chance to purchase smart home technology in the future.	Moons et al (2018)
6.	I plan to purchase smart home technology in the next three months.	Gao & Bai (2013)
7.	I will try to use the smart home technology in future.	Gao & Bai (2013)
8.	If given a chance, I intend to use smart home technology.	Gao & Bai (2013)

Items for Economic Performance

No.	Item	Source
1.	Smart home technology help in saving energy during MCO.	Zanocco et al. (2021)
2.	Smart home technology increases energy efficiency.	Wan Mokhtar & Ismail (2018)
3.	Smart home technology plays a role in helping the home energy management.	Wan Mokhtar & Ismail (2018)
4.	Smart home technology could help household to save energy bill.	Ji & Chan (2019)
5.	Smart home technology does not need high maintenance costs.	Ji & Chan (2019)
6.	Smart home technology is cost effective.	Ji & Chan (2019)
7.	Smart home technology could report the total energy usage information.	Ji & Chan (2019)
8.	*Smart home technology could report the level energy usage information of appliances.	Ji & Chan (2019)

*Note: *Item dropped in actual study*

Items for Environmental Concern

No.	Item	Source
1.	Smart home technology can help to reduce the global warming problems.	Schill et al (2019)

2.	The mass media has advertised the information that smart home technology is a green product that helps to protect the environmental.	Schill et al (2019)
3.	Household has the awareness to use smart home technology to protect environment.	Ji & Chan (2019)
4.	Using eco-friendly smart home technology would increase environmental benefits.	Schill et al (2019)
5.	Using eco-friendly smart home technology will increase the quality of the environment.	Schill et al (2019)
6.	Smart home technology may reduce the harmful waste that harm the environment.	Rasyidah et al (2020)
7.	Using smart home technology would enable household to save the environment.	Schill et al (2019)
8.	Smart home technology could help in reducing the harmful material that causes ozone depletion.	Schill et al (2019)

Items for Attitude Toward Technical Performance

No.	Item	Source
1.	I can control every electrical device of smart home technology through a simple operation.	Yang, Lee & Lee (2018)
2.	The functions of smart home technology could enable household to use it easily.	Yang, Lee & Lee (2018)
3.	The functions of smart home technology could improve household's living comfort.	Ji & Chan (2019)
4.	The design of smart home technology could enable household to use it conveniently.	Ji & Chan (2019)
5.	Smart home technology provides auto-adjusted control.	Yang, Lee & Lee (2018)
6.	Smart home technology could achieve automatic operation which requires minimized manual control.	Ji & Chan (2019)
7.	Smart home technology enhances the quality of life in home.	Mokhtar & Ismail (2018)
8.	Smart home technology is convenient as it can manage home devices from one place.	Mokhtar & Ismail (2018)