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The Factors Affecting Consumer Acceptance of The Home Cleaning Service Application

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Abstract: *This research aims to discover the key factors influencing customer acceptance of home cleaning service applications in Da Nang. Survey data collected from 400 people currently living in Da Nang city has been analyzed to provide evidence. The results from the regression analysis by the SPSS tool have shown that there are 6 factors and decreasing levels to the decision to accept the home cleaning service application, which is: Perceived usefulness, Amount of information about the application, Perceived enjoyment, Perceived risk, Security and privacy and Perceived ease of use. As a result, the author gives management implications to attract customers to use Da Nang city's home cleaning service application.*

Keywords: Customer acceptance, perceived usefulness, perceived ease of use, perceived enjoyment, perceived risk, amount of application information, security and privacy.

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I. INTRODUCTION

Under the impact of IT and the movement of the world, since 2019, Vietnam began to enter the moment of digital economic breakout. IT and industry 4.0 also impact many other professions and many other aspects of life activities not only in the digital economy. To use devices such as smart mobile phones and tablets is also one of the many IT results. To serve the growing needs of the above electronic devices, it is very wise to invest in mobile applications. Currently, most of the users in the world, especially Vietnam, are familiar with On-demand apps. Typical examples are: Transport services, call technology cars such as Goviet, Grab ... Therefore, this is also the premise for developing other service applications such as laundry, cleaning, shopping, and delivery row…

Technological innovations such as smart mobile phones, online home shopping, and digital TVs have spurred researchers' interest in the field of consumer innovation adoption. Consumer acceptance has been defined as the process (Rogers, 1976), traditionally defined as a series of steps by which a consumer moves from initial knowledge of an innovation to shaping innovation attitudes toward that system to decide to accept it (Rogers, 1962). The level of customer acceptance for the home cleaning service application will be how the customer receives knowledge about the application, through learning and discovery, leading to a positive attitude towards that application, to go to work decision to accept and use it in daily life.

In recent years, there are many types of research on acceptability in banking, payment, transportation, etc... Studies show the factors that influence the decision to use technology or the application of the customer. Based on previous research and the potential found in smartphone-based application development, this study is conducted to inherit the previous research and further development to evaluate the effects that affect the level of customer acceptance with a home cleaning service application. Besides, this research focuses mainly on the area of Da Nang City, not on a large scale. Therefore, this study focuses on the following issues: (i) Determining the factors that affect the level of customer acceptance; (ii) Building a quantitative model of the influencing factors; (iii) The study is conducted in Danang City. From there, conclude the factors affecting customer acceptance for the home cleaning service application and reinforce the theoretical system.

II. LITERATURE REVIEW

1.1. Research theories

The home cleaning service application

Along with the development of technology and society, it cannot be denied the importance of technology application benefits. Modern life makes people gradually become busier for work, social, and personal entertainment purposes. The home cleaning service application was born to help optimize everyone's time in cleaning. The model of these applications is similar to the model of booking a car, ordering food through apps such as Grab, Now, Goviet, etc. These are applications that help schedule help according to each time

frame depending on the needs of people. Hourly maid model is the main service that comes from these applications; in addition, depending on the needs of the main customer base of the business and the goals that the business aims at, other services will be developed to support and promote that application.

There are 3 service providers following this model in Da Nang city, including bTaskee, jupviec, and 3clean. To use these applications, users only need to download the application on the App Store and Google Play, then schedule cleaning when necessary. These applications bring customers many benefits such as simplicity, convenience in ordering services, prices are always transparent, information about maids is clearly displayed, but still, some disadvantages need to be overcome in the future, the two most significant drawbacks are that the job is not fixed, which quickly leads to the collaborators leaving the business, the habits of customers are still a big problem to be solved. In this study, the author focuses on the factors that affect the customer's acceptance of the home cleaning service application, thereby offering solutions to improve the above two problems.

Relevant theoretical foundations

The study draws on five theories: the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), the Model of Combining TAM and TPB (C-TPB-TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT). This paper will use the TAM technology acceptance model as the foundation for the research.

According to the Theory of Reasoned Action (TRA) paradigm, behavioral intention leads to behavior, and intention is determined by an individual's attitude toward the conduct and subjective normative impact surrounding the activity (Fishbein & Ajzen, 1975). In this case, behavioral intention is influenced by attitude and subjective norms. Martin Fishbein and Icek Ajzen developed this model in 1975 as an improvement over Information Integration Theory. First, TRA adds another element to the persuasion process, behavioral intention. Rather than trying to predict attitudes, rational action theory is more concerned with behavior. Second, TRA uses two factors, attitudes and subjective norms, to predict behavioral intentions. This means that whenever our attitude causes us to do one thing. Still, the relevant criteria dictate that we should do something else, both factors now influence our intention to do something else. Over time, the notion of reasoned action is developed and perfected. The Theory of Planned Behavior (TPB) is considered an improvement of the Theory of Reasoned Action - TRA, these two theories are often mentioned and discussed together. The author of Ajzen's Theory of Planned Action - TPB (1991) proposed that three elements influence the intention to undertake conduct: attitude toward the behavior, subjective norms, and perceived control behavior. In this theory, the determinant of self-perception or the ability to perform a behavior is called perceived behavioral control.

Davis (1986) developed the Technology Acceptance Model (TAM), which is based on the Theory of Reasonable Action - TRA is more specifically concerned with forecasting the acceptability of information technology by users. Davis (1986, 1989) provided the TAM model with the following substructures: perceived usefulness (PU), perceived ease of use (PEOU), attitude (A), and behavior intention (BI). PU and PEOU, among the constructs, shape consumers' views about technology and determine their attitudes toward it, thereby forecasting its acceptance. In particular, the Technology Acceptance Model is widely recognized as a reliable model in modeling information technology adoption by users. The TAM model focuses on the influence of perception on user adoption. The Technology Acceptance Model - TAM was proven to be able to predict users' behavioral decisions and actual usage of new technology by Todd and Taylor (1995), although this model lacks two factors: social influence and perceived behavioral control. Todd and Taylor (1995) proposed the C-TAM-TPB model, which combines the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM). Combining two TAM and TPB models in the same domain improves prediction and application power over utilizing each TAM and TPB model alone. Finally, Venkatesh created the Unified Theory of Acceptance and Use of Technology - UTAUT in 2003 to test technology acceptance and use a more uniform methodology. This model combines eight prior models based on a similar viewpoint to investigate user acceptance of a certain information technology.

1.2. Related constructs

Perceived usefulness

This was defined by Fred Davis (1989) as "The degree to which a person believes that using a particular system will enhance his or her job performance". It means whether someone finds the valuable technology for what they want to do.

For the research model, perceived usefulness describes how customers perceive and believe that using maid services on application platforms will bring many valuable results. A home cleaning service app is helpful if it provides a courtesy to a single consumer. Customers will use the maid service through the application if they find that the application is effective in their work. So, the author's hypothesis is:

H_1: Perceived usefulness has a positive effect on consumer acceptance of home cleaning service apps.

Perceived ease of use

"The degree to which a person believes that using a specific system will be effortless", Davis said (Davis 1989). The hurdles will be overcome if the technology is simple to use. No one will enjoy it if it is hard to operate and the interface is difficult to understand. As a result, one of the most critical variables influencing user adoption and utilization of new technology is the ease of use. In theory, ease of use is defined as the user's perception that the application's system is simple to understand, learn, and use.

During an explosion of apps, an easy-to-use app needs a consistent, user-friendly interface. The content about the service or product needs to be presented clearly and easily, the interaction function is more useful, the speed of link transfer and page loading also needs to be faster. From there, the author came up with the following hypothesis:

H_2: Perceived ease of use has a positive effect on consumer acceptance of home cleaning service apps.

Perceived enjoyment

Perceived enjoyment was defined as the extent to which a technological activity was regarded delightful in and of itself, regardless of any potential performance repercussions (Davis, Bagozzi, & Warshaw, 1992). As it comes to the use of home cleaning service apps, when users perceive and feel the pleasure of using the service, they are more likely to use it again.

The user's level of happiness and interest when using the home cleaning service through the application is measured by perceived enjoyment in this research model. Users' acceptance of the application will rise if they believe that using this service provides them with an engaging and thrilling journey of learning and discovery. As a result, the author's theory is as follows:

H_3: Perceived enjoyment has a positive effect on consumer acceptance of home cleaning service apps.

Perceived risk

Consumers' perceived risk is the amount of uncertainty they feel while buying a product or service from a producer or supplier. According to Bauer (1960), perceived risk is linked to doubt, and repercussions are linked to consumer behavior. According to the Theory of Planned Behavior- TPB, perceived risk can impair the behavioral control of unsure customers and harm their behavioral decisions. Users will be more ready to accept the program and its services if the impression of dangers associated with user information and transactions is decreased, and users may regulate their behavior in the online environment. Therefore, the author hypothesizes about risk perception as:

H_4: Perceived risk will have a positive effect and a negative effect on acceptance intention to use the home cleaning service app.

Amount of information about the application

The number of information consumers has about an app has been identified as a major factor influencing usage. According to Sathy (1999), in a study on the use of online banking services, many individuals are unfamiliar with the service, yet a lack of awareness is a big element in people's refusal to adopt it.

The amount of information offered by the company regarding the application that consumers will use is the first step in deciding whether or not to learn more about this service or product. The more diverse and rich the information, the closer the user gets to the home cleaning service application. Beneficial information flows have a positive impact on the user's perception of the service and application. As a basis, the following is the author's hypothesis:

H_5: The amount of information about home cleaning service positively affects consumer acceptance of home cleaning service apps.

Security and privacy

Confidentiality can be defined as 'the state of being free from danger and threat', the security context used here is the amount of information that is confidential and is not shared with anyone without permission prior authorization and privacy can be defined as 'the state of being free from unwanted or unwanted intrusion or disturbance and the ability of an individual or group to isolate themselves or information about themselves and through that express themselves selectively. The importance of security and privacy to the acceptance of online services has been documented in many previous studies.

As the number of products and services offered over the Internet rapidly increases, consumers are increasingly concerned about security and privacy issues. According to several previous studies, privacy issues have proved an essential barrier to using services online. In general, many consumers do not want to give out

their personal information over the phone or the Internet, such as credit card information when making online transactions. Users want control over what data is collected, for what purposes, and how their data is recorded and processed; when users cannot control this information, they will become more afraid and hesitant to accept new technology.

Since trust, security, and privacy are multi-dimensional constructs and need further explanation, in this research, the author focuses only on the aspects that consumers care most about. The author is interested in the level of trust in the technology of the home cleaning service app, through which the author proposes the hypothesis that:

H_6: Security and privacy have a positive effect on consumer acceptance of home cleaning service apps.

Research models

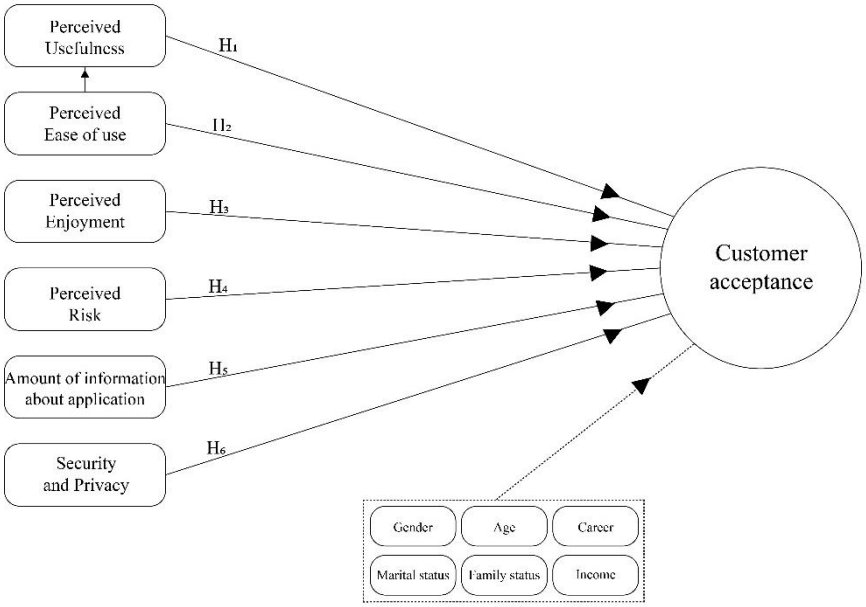

Figure 1. Research models

III. METHODOLOGY

Scale design

As shown in Table 1, the questionnaire items used to measure the constructs of this study were drawn from the modification of the items used in the previous study.

Table 1 Components of the scale

Constructs	No. items	Items	Sources
Perceived usefulness	6	1. I think the home cleaning service app is necessary 2. I think the home cleaning service app saves time looking for a maid 3. I think the home cleaning service app helps to have more time flexibility in ordering services 4. I think the home cleaning service app meets the needs of daily use 5. I think the home cleaning service app helps increase the efficiency of using the maid service 6. Overall, I think the home cleaning service app is useful and easy to use	Peter Stafors and Rasmus Nykvist (2011); Le Thanh Tuyen (2011); Tero Pikkarainen et al (2004)
Perceived ease of use	5	1. I think it's easy to learn to use the home cleaning service app 2. I think the interaction with the home cleaning service app is very clear and easy to understand	Tero Pikkarainen et al (2004); Peter Stafors and Rasmus Nykvist (2011)

		3. I think the home cleaning service app is very flexible to interact	
		4. I think it's very easy to become proficient in using a home cleaning service app	
		5. Overall, I think the home cleaning service app is very easy to use	
Perceived enjoyment	3	1. Using the home cleaning service app is fun 2. Using the home cleaning service app is a positive thing 3. Using the home cleaning service app is wise	Tero Pikkarainen et al (2004)
Perceived risk	3	1. I think I can accept the risk in using the app 2. I'm worried that the transaction during the checkout process might go wrong 3. I'm worried that the information on the application and my actual service experience is not the same	Ha Nam Khanh Giao và Vo Van Linh (2016)
Amount of information about application	4	1. I think the amount of information provided about the home cleaning service app affects my acceptance level 2. I think the amount of diverse information provided about the home cleaning service app affects my acceptance level 3. I think the amount of interesting information provided about the home cleaning service app affects my level of acceptance 4. I think the amount of exact information provided about the home cleaning service app affects my acceptance level	Tero Pikkarainen et al (2004)
Security and privacy	6	1. The technology applied by the home cleaning service app makes me trust 2. The home cleaning service app can protect my privacy 3. The application is full of security features 4. The home cleaning service app can protect my information 5. I think the company behind this app is reputable 6. I think I can count on this app	Tero Pikkarainen et al (2004); Sejin Ha and Leslie Stoel (2008)
Customer acceptance	3	1. I will learn how to use the home cleaning service app 2. I will use the home cleaning service app shortly 3. I will recommend this app to everyone	Le Thanh Tuyen (2011)

Questionnaire design

The author moves on to designing table questions for data collection after finishing the correction, addition, and construction of scales suitable for surveying the components affecting the customer acceptance level for the home cleaning service application. The questionnaire is divided into three sections:

After completing the correction, addition, and construction of scales suitable for surveying the factors affecting the customer's acceptable level for the domestic helper application, the author designs the questionnaires for data collection. In this study, the authors use a Likert scale that provides a range from strongly disagree to strongly agree. A 5-point Likert scale questionnaire will be used to measure the impact between variables. The questionnaire is divided into three parts:

Part A is the general information section consists of 5 questions. The purpose of this part is to gather preliminary information about the consumer. Keep track of the frequency with which the service is used, the channels through which it is delivered, and customer awareness of the home cleaning service apps. This section

serves as a descriptive analysis and information to assist the author in determining the acceptability of house cleaning service apps.

Part B is the survey information about the application consists of 30 questions. Record the level of agreement on the observed variables (expressed in statements) measured for the concepts in the research model. This questionnaire's main component is survey information, which aids in determining customers' perceptions of the following factors: Perceived usefulness, Perceived ease of use, Perceived enjoyment, Perceived risk, Amount of information about the application, and Security and privacy.

Part C is personal information consists of 9 questions. Age, gender, education level, occupation, current address, marriage and family status, monthly income, and the cost of employing the present maid service are all important details to keep track of. The author's ability to characterize the client group is aided by the recording of this information.

Sample selection range

There were two stages to the investigation: preliminary research and formal research. A pilot study is conducted with a sample of 10 people who are already aware of the home cleaning service applications. The formal research (N=400) included participants between the ages of 25 and 55 who lived in Da Nang.

IV. RESULTS

4.1 Data Descriptive Statistics

The author carried out the study with a minimum sample size of 200, So, the author sent the survey, and the results obtained 400 questionnaires from the people who were living in Da Nang city, aged from 25 to 55 years old. Out of 400 questionnaires collected, there were 275 valid responses to be included in the analysis. Based on 400 surveys, 125 said they did not use the maid service. Thus, they were excluded. As a result, only 275 samples are evaluated.

The author continued to survey the preliminary information of the respondents from the 275 questionnaires included in the study. Regarding gender, the survey showed that 211 female customers (or 76.7%) and 64 male customers (or 23.3%) participated in this survey.

Regarding age, the author surveyed people aged from 25 to 55 years old. The author divides these objects into 4 groups:

(1) The customer group is from 25 to 30 years old: This is a vibrant and youthful age group. They enjoy learning new things and exploring new knowledge and technologies; they are also a group of people who are open to new experiences. Furthermore, customers at this age can be financially self-sufficient but not wealthy, and there are numerous changes. According to the study, 52 consumers (or 18.9%) performed surveys from this client category.

Up to 158 customers (or 57.5%) have conducted the survey. (2) The customer group is from 31 to 36 years old: This age group is the age group with many potentials to exploit. They are young and dynamic enough to explore new technologies; they are willing to learn and absorb new technologies. In addition, they have a stable job and income to use support services for their daily lives.

(3) The customer group is aged from 37 to 43: This is the age group with secure jobs and money and a relatively high level of adoption of new technologies, though not as high as the group before it (2). This survey has 60 customers (or 21.8%) participating.

(4) The customer group is from 44 to 55 years old: The customers from this customer file have stable income and jobs and have a position in society. Still, these people are in the group that it difficult to accept new things, new technologies. The survey showed that five customers (1.8%) participated in this survey.

Regarding the academic level, two respondents (or 0,7%) have intermediate education; 6 respondents (or 2.2%) have a college degree; 31 respondents (or 11.3%) have a university degree, and at most 236 respondents (or 85.8%) are in the postgraduate group.

Regarding occupation, 19 people (or 6.9%) are students; 2 people (or 0,7%) are workers; technical, office staff has 79 people (or 28.7%); 61 people (accounting for 22.2%) are managers; 23 people (8.4%) are businessperson; and 91 people (or 33.1%) are salesmen.

Regarding the living area of the survey respondents, the author received the following results: at most, Hai Chau District had 131 people (or 47.6%) surveyed, Cam Le District had 9 people (or 3.3%) surveyed, Lien Chieu District has 13 people (or 4.7%) surveyed, Son Tra District has 46 people (or 16.7%) surveyed, Ngu Hanh Son District has 41 people (or 14.9%) conducted the survey and in Thanh Khe District 35 people (or 12.7%) conducted the survey.

The study was conducted with 275 people, of which 222 were married (accounting for 80.7%) and 53 were still single (accounting for 19.3%). The poll also found that 53 people (or 19.3%) belonged to families without children, 122 people (or 44.4%) belonged to families with children, and 100 individuals (or 36.4%) belonged to the multi-generational family.

The author separated the respondents' monthly income into four groups: those with low income or living on family allowance (such as students, students, etc.), those with average income (3 to 5 million VND/month), and those with high income (6 to 10 million VND/month). Out of 275 people interviewed, 13 (or 4.7%) earn less than 3 million VND per month, while 83 (or 30,2%) make between 3 and 5 million VND per month. Monthly, the author documented 153 people (or 55.6%) with incomes ranging from 6 to 10 million VND/month and 26 people with incomes over 10 million VND/month (or 9.5%).

The author separates the cost of employing the monthly maid service into three groups: those who pay less than 1 million VND per month, those who pay between 1 million and 2 million VND per month, and those who spend more than 2 million VND per month. Customers will be represented by each group. There are 141 people (or 51.3%) who pay less than 1 million VND per month for maid service, and 116 people (or 42.2%) who pay between 1 million and 2 million VND per month for maid service, while 18 customers (or 6.5%) spent more than 2 million VND/month on this service.

Table 2 Statistical table describing demographic analysis.

Category		Frequency (n=275)	Percent
Age	From 25 - 30	52	18.9
	From 31 - 36	158	57.5
	From 37 - 43	60	21.8
	From 44 - 55	5	1.8
Gender	Male	64	23.3
	Female	211	76.7
Academic level	Intermediate	2	0,7
	College	6	2.2
	University	31	11.3
	Postgraduate	236	85.5
Location	Hai Chau District	131	47.6
	Cam Le District	9	3.3
	Lien Chieu District	13	4.7
	Son Tra District	46	16.7
	Ngu Hanh Son District	41	14.9
	Thanh Khe District	35	12.7
Occupation	Student	19	6.9
	Worker	2	0,7
	Technical/Office staff	79	28.7
	Managers	61	22.2

	Businessperson	23	8.4
	Salesmen	91	33.1
Marital status	Single	53	19.3
	Married	222	80,7
	Family without children	53	19.3
Family status	Family has children	122	44.4
	Multiple generations family	100	36.4
	Under 3 million VND	13	4.7
	From 3 to 5 million VND	83	30,2
Monthly income	From 6 to 10 million VND	153	55.6
	Over 10 million VND	26	9.5
Cost of using maid service	Under 1 million VND/month	141	51.3
	1 million to 2 million VND/month	116	42.2
	Over 2 million VND/month	18	6.5

4.2 Analysis the reliability of the scale

By analyzing the scale's reliability by Cronbach's Alpha coefficient for 6 scales of the independent variable and 1 scale of the dependent variable. The analysis results show that all scales have Cronbach's Alpha coefficient greater than 0,6 (Hair et al., 1998); the correlation coefficient of variables - the total is greater than 0,3 (Hair et al., 1998) and there is no case where the removal of observed variables can make the Cronbach's Alpha coefficient of this scale larger than the Cronbach's Alpha coefficient when the variable is not removed; that shows that the scale ensures reliability. Therefore, all observed variables are accepted and will be used for exploratory factor analysis (EFA).

4.3 Exploratory Factor Analysis (EFA)

Factor analysis of the independent variables scale

After analyzing the Cronbach's Alpha reliability coefficient, the test results show that 27 observed variables are satisfactory for exploratory factor analysis (EFA). The exploratory factor analysis (EFA) was carried out using SPSS 20,0 software. Bartlett's test is used to test the hypothesis H0 that the variables are not correlated with each other in the population, and the KMO value is used to test whether the sample size we have is suitable for factor analysis or not. The large value of KMO = 0,784 (> 0,5) is sufficient for factor analysis to be appropriate. Sig.=0,000 in the Bartlett test < 0,05, which rejects the null hypothesis that the observed variables are not correlated with each other in the population, or other words, the observed variables are correlated.

Table 3 KMO and Barlett's Test of independent variables.

KMO coefficient		0,784
Bartlett's Test of scales	Approx. Chi-Square	2567,873
	df	351
	Sig.	0,000

Table 4 The results of exploratory factor analysis EFA for independent variables

	Component					
	1	**2**	**3**	**4**	**5**	**6**
HI6	0,779					
HI1	0,757					
HI3	0,742					
HI4	0,684					
HI5	0,677					
HI2	0,647					
BM3		0,692				
BM1		0,678				
BM5		0,677				
BM2		0,660				
BM6		0,640				
BM4		0,617				
SD1			0,775			
SD4			0,774			
SD2			0,754			
SD3			0,704			
SD5			0,608			
IF1				0,789		
IF4				0,780		
IF2				0,770		
IF3				0,703		
TT3					0,855	
TT2					0,836	
TT1					0,803	
RR3						0,840
RR1						0,837
RR2						0,830
Eigenvalue	**5,569**	**2,454**	**2,313**	**2,069**	**1,816**	**1,661**
% of Variance	**20,625**	**9,090**	**8,568**	**7,664**	**6,727**	**6,152**
Cumulative %	**20,625**	**29,715**	**38,283**	**45,947**	**52,674**	**58,826**

The SPSS analysis findings show that Bartlett's test has Sig. = 0,000 < 0,05, implying that the observed variables in the initial factor analysis are generally connected with overall. The KMO coefficient = 0,784 > 0,5. This shows that factor analysis was appropriate for the research data. Six components were extracted as a consequence of the EFA analysis.

Furthermore, the SPSS program provides indices of cumulative coefficient percent more significant than 50% (58,826% indicates that the above six factors explain 58,826% of the data variation), Eigenvalues of all aspects more than 1, and factor loading greater than 0,4 for all observed variables. All of the indicators listed

above are qualified. So, the regression model will have six independent variables: Perceived usefulness (HI); Perceived ease of use (SD); Perceived enjoyment (TT); Perceived risk (RR); Amount of information about the application (IF); Security and privacy (BM).

Factor analysis of the scale of the dependent variable

Perform EFA analysis for dependent variables using the principal Components method with Varimax rotation. Test the suitability of factor analysis for the initial data by the KMO coefficient (Kaiser - Meyer - Olkin) and the Barlett statistic.

Table 5 KMO and Barlett's Test of dependent variables

KMO coefficient		0,715
Bartlett's Test of scales	Approx. Chi-Square	281,728
	df	3
	Sig.	0,000

Table 6 The results of exploratory factor analysis EFA for dependent variables

	Component
	1
MD2	0,869
MD3	0,854
MD1	0,842
Eigenvalues	2,194
% of Variance	73,141
Cumulative %	73,141

The SPSS analysis findings show that Bartlett's test has Sig. = 0,000 < 0,05, implying that the observed variables in the preceding factor analysis are generally connected. The KMO coefficient = 0,715 > 0,5. This shows that factor analysis was appropriate for the research data. One component was extracted as a consequence of the EFA analysis. Furthermore, the SPSS program provides indices of cumulative coefficient percent larger than 50% (73,141%), Eigenvalues of all factors more than 1, and factor loading greater than 0,4 for all observed variables. All of the indicators listed above are qualified.

4.4. Correlation analysis

Correlation analysis was performed between the dependent variable Customer acceptance (MD) with the independent variables: Perceived usefulness (HI), Perceived ease of use (SD), Perceived enjoyment (TT), Perceived risk (RR), Amount of information about the application (IF) and Security and privacy (BM). The results of the correlation analysis are presented in table 7 below:

Table 7 The results of the correlation analysis

		HI	SD	TT	RR	IF	BM	MD
HI	Pearson Correlation	1	0,215**	0,250**	-0,032	0,245**	0,265**	0,487**

	Sig. (2-tailed)		0,000	0,000	0,594	0,000	0,000	0,000
SD	Pearson Correlation	0,215**	1	0,196**	-0,055	0,231**	0,280**	0,413**
	Sig. (2-tailed)	0,000		0,001	0,367	0,000	0,000	0,000
TT	Pearson Correlation	0,250**	0,196**	1	-0,021	0,282**	0,245**	0,466**
	Sig. (2-tailed)	0,000	0,001		0,725	0,000	0,000	0,000
RR	Pearson Correlation	-0,032	-0,055	-0,021	1	-0,020	0,045	-0,231**
	Sig. (2-tailed)	0,594	0,367	0,725		0,747	0,460	0,000
IF	Pearson Correlation	0,245**	0,231**	0,282**	-0,020	1	0,373**	0,516**
	Sig. (2-tailed)	0,000	0,000	0,000	0,747		0,000	0,000
BM	Pearson Correlation	0,265**	0,280**	0,245**	0,045**	0,373**	1	0,483**
	Sig. (2-tailed)	0,000	0,000	0,000	0,460	0,000		0,000
MD	Pearson Correlation	1	0,487**	0,413**	0,466**	-0,231**	0,516**	0,483**
	Sig. (2-tailed)		0,000	0,000	0,000	0,000	0,000	0,000

The results of the correlation analysis showed that all the independent variables (HI, SD, TT, RR, IF, BM) were correlated with the dependent variable (MD) at 1% significance level. The dependent variable "Amount of application information" has the strongest correlation with the independent variable "Customer acceptance" (Pearson coefficient = 0,516), followed by the variable "Perceived usefulness" (Pearson coefficient = 0,487), "Perceived risk" (Pearson coefficient = -0,231), "Security and privacy" (Pearson coefficient = 0,483), "Perceived enjoyment" (Pearson coefficient = 0,466), and finally the weakest correlation with the variable "Perceived ease of use" (Pearson coefficient = 0,413). This close correlation is expected in the research because it is the tight linear relationships between the variables that will explain the influence of the factors in the research model. Therefore, all these independent variables can be included in the regression analysis.

4.5. Regression analysis

Multivariate regression analysis between the dependent variable "Customer acceptance - MD" and 6 independent variables (HI, SD, TT, RR, IF, BM) by Enter method. The results of the multivariate regression analysis are presented in the table below:

Table 8 Model summary of regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,774[a]	0,599	0,590	0,42509	1,810

Table 9 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72,226	6	12,038	66,617	0.000[b]
	Residual	48,427	268	0,181		
	Total	120,653	274			

Table 10 Regression coefficients

Model	Unstandardized Coefficients		Standardized	t	Sig.	Collinearity Statistics	
	B	Std.Error	Beta			Tolerance	VIF
1(Constant)	-0,537	0,285		-1,882	0,061		
HI	0,296	0,047	0,262	6,311	0,000	0.826	1.211
SD	0,210	0,049	0,178	4,310	0,000	0.763	1.311
TT	0,240	0,043	0,234	5,614	0,000	0.793	1.256
RR	-0,196	0,036	-0,213	-5,479	0,000	0.896	1.116
IF	0,295	0,049	0,259	5,977	0,000	0.898	1.114

The results of the regression model show that the adjusted R square is 0,590, which means that 59% of the variation of the dependent variable "Customer acceptance – MD" is generally explained by the independent variables included in the model. Besides, the F test also shows the Sig. value is very small (Sig. = 0,000), which proves that the research model is suitable for the data set under investigation.

All variables HI, SD, TT, RR, IF, BM are statistically significant (Sig. < 0,05). The coefficient of acceptance (Tolerance) is quite high (from 0,786 to 0,991) and the exaggeration coefficient of variance is low (from 1,009 to 1,272, less than 10), so the phenomenon of multicollinearity between the independent variables in the regression model is small acceptable.

In summary, based on the results of the regression analysis above, the author concludes: six factors are affecting the customer's acceptance for the home cleaning service application: (1) Perceived usefulness; (2) Perceived ease of use; (3) Perceived enjoyment; (4) Perceived risk; (5) Amount of information about application and (6) Security and privacy. Among the above 6 factors, the factor "Perceived usefulness" has the greatest

impact on "Customer acceptance" with a regression coefficient of 0,262, the factor with the smallest impact is "Perceived risk" with a regression coefficient of -0,213. The results of the regression are presented in mathematical form as follows:

MD = 0,262*HI + 0,178*SD + 0,234*TT -0,213*RR + 0,259*IF + 0,219*BM

Therefore, hypotheses testing results show:

Regression analysis results show that there is a positive relationship between perceived usefulness and customer acceptance with a regression coefficient of 0,262 so hypothesis H_1 is accepted. Thus, perceived usefulness is one factor that affects customers' acceptance of the home cleaning service applications.

Regression analysis results show that there is a positive relationship between perceived ease of use and customer acceptance with a regression coefficient of 0,178 so hypothesis H_2 is accepted. Thus, perceived ease of use is one factor that affects customers' acceptance of the home cleaning service applications.

The regression analysis findings demonstrate a positive association between perceived enjoyment and customer acceptance, with a regression coefficient of 0,234, indicating that hypothesis H_3 is accepted. As a result, perceived enjoyment is one of the elements influencing client adoption of home cleaning service applications.

Regression analysis results show that there is a negative relationship between risk perception and customer acceptance with a regression coefficient of -0,213, so the hypothesis H_4 is accepted with a negative effect and discards the positive effect. Thus, perceived risk is one of the factors affecting customer acceptance of home cleaning service applications.

The regression analysis findings demonstrate a positive association between the amount of information about application and customer acceptance, with a regression coefficient of 0,262, indicating that hypothesis H_5 is accepted. As a result, the amount of information about the application is one of the elements influencing client adoption of home cleaning service applications.

Regression analysis results show that there is a positive relationship between security and privacy and customer acceptance with a regression coefficient of 0,178 so hypothesis H_6 is accepted. Thus, security and privacy are some of the factors that affect customers' acceptance of the home cleaning service applications.

V. CONCLUSION AND RECOMMENDATIONS

5.1 Summary of research results

The research results reveal that the model's scales are both dependable and valid. The study also identified a model of component variables influencing customer acceptance of home cleaning services in the Danang City market, with a total of 6 elements influencing customer approval at various levels of influence. They are: (1) Perceived usefulness has the greatest influence on customer acceptance of home cleaning service (with $\beta = 0,262$), followed by (2) Amount of information about application (with $\beta = 0,295$), followed by (3) Perceived enjoyment (has $\beta = 0,234$), (4) Perceived risk (has $\beta = -0,213$), (5) Security and privacy (has $\beta = 0,219$), finally (6) Perceived ease of use (has $\beta = 0,178$) has the smallest impact on customer acceptance.

The research also assessed the influence of each customer group by gender, age, occupation, education level, marital status, family status, monthly income, and usage costs service to customer acceptance of home cleaning service application between different customer groups.

5.2. Meaning of research

Determining the factors that affect the customer acceptance of home cleaning service application is extremely necessary for service providers; it serves as the basis for service providers to plan business strategies and development plans according to their priorities in line with their resources, to best meet the needs of customers, bringing hourly domestic help services closer to users, and at the same time can popularize and develop this service in the future.

5.3. Theoretical implications

In this study, the author provides a thorough research methodology for constructing a network connected to Customer Acceptance by considering the relationships between the components that influence it. This allows the author to better understand the consumer's acceptance of new technology and services, particularly the elements influencing customer acceptance in Da Nang. The study found that perceived usefulness, perceived ease of use, perceived enjoyment, perceived risk, amount of information about the application, security and privacy all have an impact on customer acceptance. According to the study, perceived usefulness is a factor that substantially influences customers' acceptance of the home cleaning service applications; when customers recognize the value of this new model, they are more likely to accept and utilize it.

Furthermore, the amount of information that customers have access to is a driving force in their desire to utilize. The more detailed and beneficial the application's material, the more people understand the

significance of the domestic help application. Aside from that, businesses' information must be honest and open for customers to trust the application and the business. Perceived enjoyment is found to have little effect on consumer acceptance, yet it is still a significant element driving customer intention to utilize the service. When clients are completely aware of the application's information, values, benefits, or hazards but are not interested to use it, the development of the home cleaning service application in Da Nang city becomes challenging.

5.4. Recommendation

Perceived usefulness is the most important factor influencing customer acceptance of a home cleaning service application. Customers will be more likely to use the service if they see the benefits of the application in their job and personal lives. The higher the intention to use, the better the application, the better the service, the greater rewards. Enterprises must pay attention to the service quality of the application, fix the weak parts based on consumer feedback, and continue to develop new services to diversify the services that businesses offer. Businesses must acquire a team of professional collaborators and more specialized qualifications to always respond swiftly and fully when clients require urgent assistance or during Tet vacations.

Perceived ease of use provides customers the impression that using the app to order cleaning is a simple process that they can get used to after one or two usages. The application needs to be simplified to be suitable for many ages. The application interface should be presented neatly and beautifully, the colors are arranged in harmony. For electronic payment processes, the contents of original prices and promotional prices should also be clearly displayed for customers to easily follow. This will bring more customers of all ages to the business.

Perceived enjoyment is bringing a new and fun feeling and experience to customers. The feeling of enjoyment when using will always keep customers attached to the business. Apps need to be refreshed periodically through simple things like changing the background color for the holidays or creating simple games that customers can play and redeem within the app. Businesses need to diversify their cooperation with other businesses to deliver vouchers that bring value to customers. This is a good thing, but it can also be harmful if overused. It will make customers feel stuck in the business and always require a voucher to use the service. Service experiences also bring enjoyment to customers. To do that, it is required that enterprises train a team of capable collaborators. This will stimulate the curiosity of customers, they will always want to go to the application to see what's new even though they have not needed to use the service of the business.

Perceived risk and security issues should go hand in hand. If the business makes customers feel that the level of risk when using its service is not high, the intention to use and return next time will increase. Because the home cleaning service application operates under a model like Grab or Now, the information about the maids will always be fully displayed to customers. So always keep these reviews and stars objective, ensuring the authenticity of the customer experience. Prices as well as the electronic payment process also need to be transparent. Policies on information security, compensation for damage when a theft occurs, along with a complaint handling process, businesses also need to provide full on the application. Supporting technologies to protect applications and user information such as fingerprint login and smart OTP when confirming transactions are essential to protect customers' privacy.

The information surrounding the application is fundamental for customers to decide whether to accept this new technology or not. Customers will have a more multi-dimensional and objective view of the home cleaning service application. Taking advantage of the enterprise's social networking channels. Posting content about programs and services on social media platforms such as Facebook and Instagram. Businesses must diversify their content portfolios in addition to creating material for applications. This is done to increase commercial recognition, bringing in new consumers for the application. Electronic newspapers are now selected so that customers can follow news instead of paper newspapers. So, take advantage of these communication channels. They are implementing offline marketing channels such as roadshows, hanging banners, distributing leaflets to reach customers who rarely use social networks. Besides, offline marketing activities also increase the identity of the business. Businesses need to exploit other channels with more new things, especially Youtube and a new social network, Tiktok, when these two social networks are very developed at the moment. Enterprises need to come up with a specific strategy for exploiting this platform.

5.5. Limitation future research

This study brings certain results and contributions, partly helping service providers understand the factors that affect the customer acceptance of home cleaning service applications to have appropriate business strategies. However, this study still has limitations:

The research is limited to Da Nang City, which is the economic heart of the Central - Central Highlands region. However, performing the poll exclusively in one location will not adequately represent Vietnam's whole market. If the poll is conducted across the country, the research findings will be more universal. This is an area in which further research should be conducted.

The research method used in this topic is the random sampling method, the number of samples is not large and the distribution is unequal among the groups. If a larger number of samples can be taken and the probability sampling method is combined with the proportional sampling method, the research results will better reflect and can show the difference in customer acceptance of home cleaning service applications. This is also a direction for further research.

Finally, this study only focuses on surveying 6 factors that affect customer acceptance to use applications. The results of the regression analysis show that the model's relevance is 59%, that is, only 59% of the variance of the dependent variable "Customer acceptance" is explained by the factors in the model. Thus, the remaining 41% of the variance of the dependent variable is explained by factors outside the model, which are components that have not been mentioned in the proposed research model. This is also a direction for further research of the topic.

5.6. Conclusion

The research revealed six characteristics that influence consumer acceptance of the home cleaning service application. However, there are several limitations to the research, and many topics need to be examined further. In the future, the research should be amended and expanded to produce a comprehensive study that can assist firms in developing this service model.

Conflict of interest

There is no conflict to disclose.

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REFERENCES

[1]. Ajzen I. (1985), "From Intentions to Action: A Theory of Planned Behavior".
[2]. Ajzen, I. (1991), "The theory of planned behavior", Organizational Behavior and Human Decision Processes.
[3]. Ajzen, I. And Fishbein, M (1980), "Understanding Attiudes and Predicting Social Behavior and Human Decision Processes".
[4]. Bruner, Gordon C. And Anand Kumar (2003), "Explaining Consumer Acceptance of Handheld Internet Devices".
[5]. Burns, A.C., & Brush, R.F. (1995), "Marketing Research".
[6]. Chen, C.(2013), "Perceived risk, usage frequency of M-banking services, Managing Service Quality".
[7]. Chen, L. (2008), "A Model of Consumer Acceptance of Moble Payment".
[8]. Dahlberg T., Mallat N., Oorni A. (2003), "A Trust Enhanced Technology Acceptance Model – Consumer Acceptance of Mobile Payment Solution".
[9]. Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology".
[10]. Davis, F.D. (1993), "User Acceptance of Information Technology: Systeam Characteristics, User Perceptions and Behavioral Impacts".
[11]. Davis, F.D.; Bagozzi and Warshaw (1992), "User acceptance of computer technology: A comparison of two theoretical models".
[12]. Dimitrios Maditinos, Dimitrios Chatzoudes, Lazaros Sari giannidis (2013), "An Examination of The Critical Factors Affecting Consumer Acceptance of Online Banking".
[13]. Fareena Sultan et al (2009), " Factors Influencing Consumer Acceptance of Mobile Marketing: A Two-Country Study of Youth Markets".
[14]. Fereshteh F., Mahsa P.R, Masoumeh D.S. and Mohammad R., S.H.T (2014), "Consumers' Perceived Risk and Its Effect on Adoption of Online Banking Services".
[15]. Fishbein, M. & Ajzen, Icek. (1975), Belief, Attitude, Intention, and Behavior: An Introduction to Theory an Research.
[16]. Ha Nam Khanh Giao, Vo Van Linh (2015), Factors affecting the acceptance of using e-banking services in Quang Ngai province.
[17]. Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), "Multivariate Data Analysis".
[18]. Henderson, R. And Divett, M. (2003), "Perceived Usefulness, Ease of Use and Electronic Supermarket Use".
[19]. Hoang Trong, Chu Nguyen Mong Ngoc (2008), Analyze research data with SPSS.
[20]. Igbaria, M., Schiffamn, S.J and Wieckowski, T.J. (1994), "The Respective Roles of Perceived Usefulness and Perceived Fun in The Acceptance of Microcomputer Technology".
[21]. Kholoud Ibrahim al-Queisi (2009), "Analyzing The Use of UTAUT Model in Explaining An Online Behavior: Internet Banking Adoption".
[22]. Le Chau Phu (2019), Factors Affecting the Decision to Use E-Banking Services of Personal Customers at Agribank - Can Tho Branch.
[23]. Le Thanh Tuyen (2011), Factors Affecting Intention to Use 3G Services: Practical Study in Da Nang City.
[24]. Legris, P., Ingham, J. And Collerette, P. (2003), "Technology Acceptance Model for Wireless Internet".
[25]. Long Pham, NhiY. Cao, Thanh D. Nguyen, Phong T. Tran (2013), "Structural Models for E-Banking Adoption in Vietnam".
[26]. Min Gong & Xu Yan (2004), "Applying Technology Acceptance Model, Theory of Planned Behavior and Social Cognitive Theory to Moble Data Communications Service Acceptance".
[27]. Muhammad Muazzem Hossain, Victor R. Prybutok (2008), " Consumer Acceptance of RFID Technology: An Exploratory Study".
[28]. Nguyen Binh Minh (2018), Factors Affecting the Intention to Accept Mobile Banking Products of Individual Customers - A Case Study for Vietcombank.
[29]. Nguyen Dinh Tho (2011), Scientific research methods in business.
[30]. Nguyen Dinh Tho, Nguyen Thi Mai Trang (2008), Marketing science research.
[31]. Paul A. Pavlou (2003). "Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model".

[32]. Peter Stalfors, Rasmus Nykvist (2011), " Consumer Acceptance Of Mobile Payment Services".
[33]. Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., Pahnila, S. (2004), "Consumer Acceptance of Online Banking: An Extension of The Technology Acceptance Model".
[34]. Polatoglum, V. N., and Ekin,S. (2001), "An Empirical Investigation of The Turkish Consumers Acceptance of Internet Banking Services".
[35]. Pyun, C.S., Scruggs, L. And Nam, K. (2002), "Internet Banking in The US, Japan and Europe".
[36]. Rogers E.M. & Shoemaker F.F. (1971), "Communications in Innovations: A Cross-Cultural Approach".
[37]. Schierz, P.G., Schlke, O., & Wirtz, B, W. (2010), "Understanding Consumer Acceptance of Moble Payment Services: An Empirical Analysis".
[38]. Sejin Ha, Leslie Stoel (2008), "Consumer E-Shopping Acceptance: Antecedents In A Technology Acceptance Model".
[39]. Sobia Zaman et al (2018), "Consumer Acceptance of Online Banking: Application of Technology Acceptance Model".
[40]. Suha Alawadhi & Anne Morris (2008), "The Use of The UTAUT Model in The Adoption of E-Government Service in Kuwait".
[41]. Tan, M.J. and Teo, T.S.H. (2000), "Factors Influencing the Adoption of Internet Banking".
[42]. Taylor, S. And Todd, P.A. (1995), "Understanding Information Technology Usage: A Test of Competing Models".
[43]. Tero Pikkarainen et al (2004), "Consumer Acceptance of Online Banking: An Extension of The Technology Acceptance Model".
[44]. Venkatesh et al. (2003), "User Acceptance of Information Technology: Toward a Unified View".
[45]. Venkatesh, V. And Davis, F.D. (1996), "A Model of The Antecedents of Perceived Ease of Use: Development and Test".
[46]. Venkatesh, V. And Davis, F.D. (2000), "Theoretical Extension of The Technology Acceptance Model: Four Longitudinal Field Studies".
[47]. Yi-Shun Wang et al (2003), "Determinants Of User Acceptance Of Internet Banking: An Empirical Study".
[48]. Yousafzai, S.Y., Foxall, G.R. and Pallister, J.G. (2010), "Explaining Internet Banking Behaviour: Theory of Reasoned Action, Theory of Planned Bahavior, or Technology Acceptance Model".
[49]. Ankit Kesharwani, Trilochan Tripathy (2012), "Dimensionality of Perceived Risk and Its Impact on Internet Banking Adoption: An Empirical Investigation".
[50]. Samar Mouakket (2010), "Extending the Technology Acceptance Model to Investigate the Utilization of ERP Systems".

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