A STUDY OF CONSUMER ATTITUDES AND BEHAVIOR TOWARDS AN AUTOMATED CHECK-OUT IN SUPERMARKETS IN BANGKOK

BY

MISS ARISARA WONGAUSSAWARIT

AN INDEPENDENT STUDY SUBMITTED IN
PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE PROGRAM IN MARKETING
(INTERNATIONAL PROGRAM)
FACULTY OF COMMERCE AND ACCOUNTANCY
THAMMASAT UNIVERSITY
ACADEMIC YEAR 2018
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ENTITLED

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AN AUTOMATED CHECK-OUT IN SUPERMARKETS IN BANGKOK

was approved as partial fulfillment of the requirements for

the degree of Master of Science Program in Marketing (International Program)

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Independent Study Title	A STUDY OF CONSUMER ATTITUDES AND BEHAVIOR TOWARDS AN AUTOMATED CHECK-OUT IN SUPERMARKETS IN BANGKOK
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ABSTRACT

A study of consumer attitudes and behaviour towards an automated check-out in supermarkets in Bangkok is a contemporary topic in applied marketing pertaining to technological issue that is important to Thailand. The first objective of this study is to identify the potential determinants towards an automated check-out. Factors such as usefulness, ease of use, reliability, enjoyment and control will be evaluated regarding the intention to use of users and on-users. The second objective is to determine relative importance of various drivers of satisfaction among users and barriers to adoption for non-users.

A supermarket operator is one of the most competitive industries in Thailand. In an attempt to reduce cost and increase customers' satisfaction. With an advancement in technology, many retailers are trying to introduce new technology to replace personal services such as automated check-out in their locations. However, there is a limitation of expanding the technology due to the adoption of customers and retailers cannot maximize their offering to customers.

This study aims to explore Thai consumer attitudes, behaviour, and factors driving the intention to use automated check-outs and barriers of non-users.

Primary and secondary research had been conducted in order to obtain information and further analyse users and non-users towards automated check-outs. A qualitative research, such as in-depth interviews, was also done to obtain insights before conducting a quantitative research to generalize the findings to the target population.

The findings have indicated that factors that influencing customers to use self-service technology are enhancement on technology and easier to adopt. Their social support also played an important role between users and non-users to show the significant difference. Customers who had social influencers such as friends and families tend to be use automated check-outs more often. Furthermore, non-users did not only prefer to communicate with the service staff but also afraid that the service staff will lose their jobs. Therefore, the barrier of adoption process may take in wider view not only for the limitation of technology knowledge but also the preference choice of human interaction.

This will facilitate readers who are in retail or supermarket operator industries who wishing to expand self-service check outs for customers and increase growth in the future.

Keywords: Grocery Shopping, Supermarket Shopping, Attitude toward Automated Checkouts

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Miss Arisara Wongaussawarit

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CHAPTER 1
INTRODUCTION

1.1 Introduction to the Study

Intense competition in retail industry has driven supermarket chains to seek for their competitive advantage on saving cost and increase customer satisfaction. Major supermarket chains in Thailand have introduced automate check-outs for many years, but seemed not a popular choice among Thai consumers. The barrier of technology adoption is a critical issue among Thai retailers. Consumers usually play a passive role and need for human assistant where there is no need to do many things at once regardless number of purchased items.

However, due to the retail 4.0 era throughout Thailand, retailers have been focusing on collaboration with other service providers such as Banking to integrate the shopping experience with allow a new technology to play an active role on shaping the consumer behaviors. Instead of waiting into the long line of check-outs, consumers become partial employees for the retailers. To address the consumers' adoption on automated check-outs in supermarkets, retailers could focus on understanding the strategic importance drivers that can increase the consumer satisfaction because their participation is involved and the co-creation process should be rewarded their input.

To be in the same line with the global trend, all major supermarket chains in Thailand have offered automated check-outs in their outlets. However, customers seem to take longer time for their adoption. This study aims to understand factors and attributes influencing consumer behavior on using automated check-outs in Bangkok supermarkets for both users and non-users. The link between various factors such as psychographic factors and intention behaviors can help retailers to identify the reasons why consumers do not use the self-service technology. The barriers from non-users can help better understanding on how to convert to an initial trail and likelihood to increase the usage pattern in the future.

1.2 Problem Statement

Definition:

Self-Service Checkouts*: A type of retail business where customers can scan their chosen products and arrange payment themselves via a technology terminal in stores.*

The study is a contemporary topic in applied marketing which will focus on a technological issue. Technology has transformed how retail business operate for many years. A presence of using automated check-outs in the supermarkets has been displayed since 2013. This evaluation in the retail technology enabled supermarkets to reduce cost and increase service efficiency. However, the current automated check-outs in supermarkets using in Bangkok are not yet primary method for payment.

In the global context, using automated check-outs system is expected to growth from USD 2.24 Billion in 2015 to reach USD 4.58 Billion by 2022, at CAGR 10.7% between 2016 and 2022 (MarketWatch 2017). Retail automated check-outs bring benefits to both consumers and retailers. The co-creation process when consumers use automate check-outs can be the potential operational cost reduction for the retailers. Consumers can reduce their time when there is a long line in the personal check-out and also become part of the retail environment with greater control by themselves.

Even through using automate check-outs in supermarkets are widely spread among several countries in Asia such as Singapore or Hongkong, but not yet in Thailand. According to some of the major supermarket chains in Thailand, Tops Supermarket owned by Central Group and Gourmet Market. Tops Supermarket reported that the ratio of using automate check-outs and a personal assistance in the retails is accounted for 10:90% form the total installation of 6 branches (Central Group 2017). While Gourmet Market from The Mall Group has reported that increasing in the installation of automated check-outs can be reduced their potential major cost in labour cost but the conversation ratio is also slight low for the past few years.

1.3 Research Objectives

This research aims to identify the factors that can have an impact on the future of retailers regarding the technology adoption of consumers which is to understand how people decide to use automated check-outs in supermarkets in Bangkok, which can apply to use in other technologies in different businesses.

The result from this study will enable supermarkets to understand on what are the motivations of automate check-out users and identify their target audiences. The investigation and supporting data will enable retailers to understand the factors influencing the usage of technology and the key barriers in technology adoption. The intension to use automated check-outs will give retailers to consider the expansion of automate check-outs and evaluate if this method will be effective for their shoppers based on the positive experiences.

1. To identify the potential determinants of attitudes towards automated check outs usage such as usefulness, ease of use, reliability, enjoyment and control.

2. To determine the relative importance of various drivers of satisfaction among users and barriers to adoption for non-users.

CHAPTER 2
REVIEW OF LITERATURE

2.1 Retail Industry in Thailand

In Thailand economy, the retail industry values 1.55 trillion and expected to grow 4.5% in 2019 (Jitpleecheep, December 2017). Supermarkets are highly competitive in Bangkok where there are five major competitors Central Food Retail (Central Food hall and Tops Supermarket), The Mall Group (Home Fresh Mart and Gourmet Market), Foodland Supermarket, Villa Market and UFM Fuji. The policy of Retail 4.0 has been encouraged the retailers to adapt their services to facelift the shopping experience where the technology is a key important achievement to increase customer convenience.

2.2 Traditional Service Encounter

According to the definition of the service encounter or the "moment of truth" has been described as "a period of time during which a consumer directly interacts with a service." (Shostack, 1985). Each Encounter is an opportunity for the company to reinforce its offering and to satisfy the customers. On the other hand, it is an opportunity to disappoint (Bitner, December 2000).The service encounter formally known as a "low-tech, high touch". However, the technology infusion might transform the nature of service encounters to be more technological interaction (Bitner *et al*., 2000). The Technology Infusion Matrix can be used to describe how the service encounter can be improved through the use of an effective technology as shown in *Figure* 2.1 *Technology Infusion Matrix.*

Drivers of Service Encounter Satisfaction

Figure 2.1*: Technology Infusion Matrix; Bitner et al.,2000*

2.3 Customer Interaction with Self-Service Technology

In recent years, there are a number of researches have proposed the framework models explaining the benefits of using more technology to interact with customers including self-service technology (SST). Self-service technology has defined as "technological interfaces that enable customers to produce a service independent of direct service employee involvement." (Meuter *et al*., 2000 February). More and more service companies are becoming multi-channel service providers by having both self- service technology and the traditional interpersonal channel (Wang *et al*., 2013).

A good example of one type of SST is an automated check-out in supermarkets which has first introduced in Bangkok by Tesco Lotus since 2013 and widely use among supermarkets for example Top Supermarkets, Gourmets Market.

SST is likely to become effective way to standardize the service to consumers, reduce customers waiting-times and reduce cost for the service providers. However, using automated check-outs in Bangkok is not a priority way of payment. Using SST as an alternative to the service is sometimes make the delivery process into

more complex condition and logic interaction for example the customer might decide whether to use SST based on the lengths of the line and the number of service employees and when the next customer arrives, they will evaluate the choice of using the SST based on the previous customer (Kokkinoua & Cranage, 2000 February).

With the growth of using SST in the current retail market, some shoppers may experience a technology anxiety (TA) when they encounter the new technology. TA specifically focuses on the user's state of mind regarding their ability and willingness to use technology-related tools (Meuter *et al.*, 2002).

Therefore, the study of Technology Acceptance Model (David,1989), as shows in *Figure* 2.2, will be used to measure the relationship of user attitudes and the intention to use self-service technology.
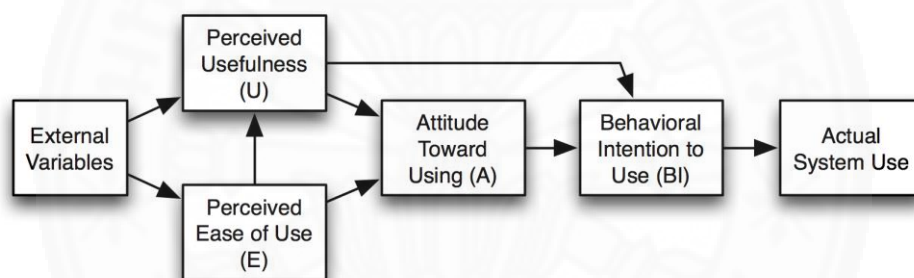
Figure 2.2: *Technology Acceptance Model; David.,1989*

TAM has proposed determinants on SST acceptance which are "Usefulness" when customers perceive to be usefulness when they save time/cost and they convenient (Ding et al.2007) and this will link to the positive intention. "Ease of Use" refers to when customers perceive a technology as simple to use, they are more likely to use it (Gelbrich and Sattler 2014), the more likely they use of the technology will increase their ability to use. "Enjoyment" refers to when technology task enjoyment increases, this will increase the positive attitude on using SST. "Reliable", TAM suggests that SST that shows a result demonstrability directly influences usage intention and behavior (Meuter et al. 2005) and "Control" has a positive impact on the intention to use and favorable forward behaviors.

2.4 Summary of Literature Review

In conclusion, due to the changing in the nature of the service encounter, the use of automated check-outs in Supermarkets has been offered by lots of retailers. Customers now have wider choices of checking out through a checkout counter (with a personal interaction) and an automated check-out (a self-service option). Values that created jointly between retailers and customers or the co-creation process will allow customers to have a feeling of being in control and it can enhance the expected value to customers (Bateson & Hui, 1987).By offering this self-service method as an option in Supermarkets, not only can they give customers convenience, but also lower the operation cost. Self-service is predicted to be an efficient way for shopping in supermarkets. However, with the limitation of automated check-outs in each supermarket may lead to the low frequency of using this machine. This findings from the study will help supermarket operators to determine the intension to use an automated check-out and factors that can help customers to be co-producers. This will allow supermarket operators to understand customers' behaviour on using an automated check-out and evaluate to increase numbers of the machine in the future.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research Methodology

A study of consumer attitudes and behavior towards an automated check-out in supermarkets in Bangkok mainly focuses on attitudes and behavior of people aged 18-50 years who use automated check-out when shopping at supermarkets. Two choices of research approach will conduct by using both qualitative and quantitative methods. A qualitative approach will employ at the beginning in order to have an understanding on attitudes to use automated check-outs and refine the questionnaire later on in a qualitative approach.

3.1.1 Secondary Research

Secondary research was conducted in order to obtain an overview of Thai consumers' perception toward using the self-service machine such as self-check-out and self-scanning and factors influencing the behavior and decision to use. Information was gathered from both reliable Thai and international sources, including Euromonitor International, Nielsen, ICSC, Inside Retail Asia and Thai Retailers Association, Academic Journal and Research Paper relating to the intension to use self-service-checkout

3.1.2 Primary Research

3.1.2.1 In-Depth Interview

In-depth interviews were conducted on two group of respondents which are those who use automate check-outs or "users" and those who use the traditional check-outs with a human or "non-users". Target respondents were male and female who live in Bangkok age 18-50 years and purchased grocery products in the supermarkets where provided automate check-outs. The study mainly focused on the attitude of users and nonusers toward the automate check-outs, explored the

behavior of users and evaluated the motivation factors that drive them to use. Findings were used as a guideline to further design an online survey.

3.1.2.2 Online Survey

Based on the findings from qualitative research, an online survey was employed using both close-ended and open-ended questions in order to explore consumers' attitudes and their behaviors. The format of close-ended questions included multiple choices, Likert scale, and checklists. Questions were divided into 4 different parts. First, the screening questions were asked to ensure that respondents would qualify and would be the population of interest. Respondents who passed the screening section would then be directed to the next parts of the survey, which include questions regarding their behavior toward shopping in supermarkets. Then the set of attitude questions would be shown regardless of users and non-users. Finally, demographic questions were asked at the end of the survey. A pilot survey was also conducted before launching the official version.

3.2 Sampling Plan

Target population are Thai male and female who purchase any grocery products at supermarkets at a regular basis and reside in Bangkok between the age of 18 to 50 years.

3.3 Data Collection

According to the limited time and resources, sample respondent within the population of interest will be use a non-probability sampling based on a convenience method. Collected data from primary sources were conducted using both qualitative and quantitative methods. According to a qualitative method, in-depth interviews were employed to obtain insights, attitudes and behavior of respondents. Respondents were acquired through personal connection. Six respondents were recruited for in-depth interviews.

Information gathered from the interviews were then used to formulate a structured quantitative survey, which was distributed online using a snowball sampling technique through different social media platforms. A total of 220 responses were collected and would be used for further analysis.

3.4 Data Analysis

The obtained data from in-depth interviews were formulated for a questionnaire design. Results from the questionnaire were analyzed by using the Statistical Package for the Social Sciences (SPSS) to identify statistical data, frequency, analysis of variance and correlation between variables in terms of respondents' characteristics, physiographical factors, behaviors and intension to use. Pearson Chi-Square Tests and Analysis of Variance, or ANOVA, were used to identify characteristics of users, determine decision making criteria, and identify factors influencing customers to use automated check-outs. Findings from qualitative and quantitative research were analysed and compared the intension to use between users and non-users of automated check-outs and what improvements for retailers to encourage customers to use more and become co-producers for companies.

3.5 Theoretical Framework

Independent Variable (IV)

Independent variables are usefulness, ease of use, reliability, enjoyment and control.

Dependent Variable (DV)

Dependent variable in this study is the attitudes toward using automate check-out in Supermarkets.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Secondary Research Findings

4.1.1 Self-Service Checkouts in a Global Context

Self-service checkouts are defined as those "technological interfaces that enable customers to produce a service independent of direct service employee involvement" (Meuter et al. 2000, p.50). Examples include automated teller machines (ATMs), hotel self-check-out systems, self-check-in kiosks in airports, automated check-outs in supermarkets. Customers then become co-producers of the service and changing the service landscape to the emerging service which have significant impacts for retailers who will need to retain satisfaction of their customers. However, the investment in self-services are resources intensive in terms of time and money.

In global grocery retailing has been moving forward to offer new experiences to their customers and self-service check-outs has played a crucial role which replaced the service personnel with technological interfaces. Firms are able to reduce labour costs, provide a consistent level of service quality and accuracy information and then increase customer satisfaction and the ultimate goal is to reach new customer segments. Self-services become a major trend in a global environment and changed the way in which companies interact with customers and it is very important to companies to understand in which circumstances that customers may choose the self-service option over the personal service option due to its high recovery of investment which depend on numbers of customers who adopt the technology.

4.1.2 Self-Service Checkouts for Supermarkets in Thailand

There are a lot of supermarkets in Thailand who are now offering the choice of self-service checkouts for their customers. Starting with the first retailer-Tesco Lotus in 2013 until Gourmet Market in 2018, the adoption of customers seems to be growing slowly. For example, Gourmet Market, a Thai chain supermarket owned by the Mall Group has operated 15 outlets with approximately 4 automated check-outs in each outlet which considered as a minority service comparing to the number of visits 10 million customers per month in combined locations. When comparing to its competitor-Tops Supermarket, a Thai chain supermarket owned by Central Group, has operated different formats of supermarkets in total of 250 branches. However, only 71 branches have offered automated check-outs only accounting for 12 stations. Retailers has evolved their service encounters to increase self-service options, however when consider the number of automated check-outs and the number of supermarkets-this service only covers in a small area and seems difficult to convince customers to be participated. As a result, it is crucial for retailers to leverage their service assets and communicate benefits to convert more customers to use automated check-outs in the future.

4.2 In-Depth Interview Result

The first in-depth interview conducted on October 24th and 25th. Now of total 4 interviewees who live in Bangkok and use an automated check-out in supermarkets. Three females (age 25,27,28) and work as a marketing officer, a senior purchasing officer and a fashion designer respectively. One male (age 28) who work as a business owner. The objective is to understand the motivation for using self-checkouts in supermarkets and the barriers for not to use them.

Results:

1. All of the interviewees agreed not to use an automated check-out when purchasing too many and heavy stuffs due to the inconvenience of scanning one by one item.

2. Three of the interviewees said that an automated check-out is their primary choice if they are in rush.

3. All of the interviewees said that a self-checkout is more beneficial to them when using noncash payment method such as credit cards, QR code and mobile payment due to they are reliable.

The second in-depth interview was conducted on December 5th on two consumers recruited in Gourmet Market, EmQuartier Branch. Two interviewees are female aged 24 years old who is a medical student and female aged 30 years old who is working in a startup company.

Results:

1. One interviewee mentioned that she was not comfortable with using automated check-outs and the process of payment such as insert money in the machine might take longer time than the payment with a human.

2. One interviewee said that when she was in a rush, using automated check-outs can be a frustrated process sometimes due to its slowness of the machine and then she would need an employee to assist. Therefore, she has waited for both machines to process and the time when a store assistant came to solve the problem.

4.3 Quantitative Research Result

4.3.1 Summary of Respondents Profile

A total of 220 respondents completed the online survey. The data was analyzed by using Statistic Package for Social Sciences (SPSS). The summary data of all respondents relating to their gender, age and education is shown in the following page (See Table 4.1):

Table 4.1: Summary of Respondents' Demographic Information (n=220)

Respondents' Demographic Information		N	%
Gender	Male	52	23.64%
	Female	168	76.36%
	Total	220	100.00%
Age	18-24	0	0.00%
	25-30	108	49.09%
	31-35	93	42.27%
	36-40	14	6.36%
	41-50	5	2.27%
	Total	220	100.00%
Education	Below High School	0	0.00%
	High School	0	0.00%
	Vocational Certificate/Diploma/Associate Degree	0	0.00%
	Bachelor's Degree	76	34.55%
	Master's Degree	144	65.45%
	Above Master's Degree	0	0.00%
	Total	220	100.00%

4.3.2 Actual Usage of Automated Check-Outs of Users and Non-Users

In order to identify users and non-users of automated check-outs for understanding their behavior to attract the intention to use. Respondents were classified by their actual usage into 4 different types according to their frequency of usage for further analysis from their adoption and intension to use.

The first group is "heavy users" who familiar with using an automated check-out and be able to use with their confident and knowledge. The second group is "medium users". Respondents classified in this group are those who have used an automated check-out only when there are employees available to help.

Even though they are not confident to use by themselves, they have displayed positive usage behaviors. The third group is "light users". These are users who only sometimes use an automated check-out which will be analysed to further study for their reasons. The fourth group is "non-users". This group has never used an automated check-out at all and they always go directly to the cashier counter. Details regarding the number and percentage of respondents in the above group are classified as following (See Table 4.2):

Table 4.2: Actual Usage of Automated Check-Outs (n=220)

Have you ever used an Automated Check-Out?	N	%
I always use an automated check-out. (Heavy Users)	20	9.10%
I always use an automated check-out when there are employees available to help. (Medium Users)	19	8.60%
I sometimes use an automated check-out. (Light Users)	98	44.50%
I never used an automated check-out. I normally go directly to the cashier counter. (Non-Users)	83	37.70%
Total	220	100.00%

4.3.3 Characteristics of Automated Check-Outs Users

To determine the difference of users and non-users behaviors in terms of number of items per one time purchase. Chi-Square Tests were conducted to test whether there was a significant difference in Relationship between user profiles-heavy users, medium users, light users and non-users and different purchase characteristics. Using a 95% confidence interval, number of items per one-time purchase was found to be significantly different among all 4 group (p-value =0.000) *(See appendix B: Relationship between User Profiles and Different Purchase Characteristics).*When users decided to use automated check-outs, they purchase 5-10 items as a majority. However, non-users always use the cashier counter when they only purchase small number of items (less than 5 items), the detail of number of items purchased in one time is shown in the following page (See Table 4.3):

Table 4.3 Number of Items per One Time Purchase

		Group of Users							
		Heavy Users		Medium Users		Light Users		Non-Users		Total
		N	%	N	%	N	%	N	%	
Number of items per one-time purchase	< 5 items	9	45%	4	21.1%	26	27%	34	41%	73
	5-10 items	10	50%	9	47.4%	57	58%	23	28%	99
	11-15 items	1	5%	1	5.3%	10	10%	22	27%	34
	> 15 items	0	0%	5	26.3%	5	5%	4	5%	14
Total		20	100%	19	100%	98	100%	83	100%	220

4.3.4 Attitudes Toward Using Automated Check-Outs

An Analysis of Variance or ANOVA test was conducted in order to identify consumer attitudes toward using automated check-outs in supermarkets with using 5 Likert Scale from ranking "1= Strongly Disagree" to "5=Strongly Agree" (*See Appendix C: Differences in Attitudes Toward Automated Check-Outs*). Using a 95% confidence level, the results showed that consumers who are always using automated check-outs have positive attitude on perceived usefulness which allow them to be more convenient and time-saving. Furthermore, they also perceive that automated

check-outs are reliable and will be work well with trustable results. Both factors have better positive attitude than ease of use. Using the machine allows customers to be able to control things from users' point of view, they want to take care of their own matters not only to easier management but also to avoid problems. On the other hand, non-users have positive intensions to use by marking on enjoyable, entertaining and easy to use. And they believe that using automated check-outs also demonstrate a faultless result and can be work well for them. A mean comparison of consumer attitudes toward automated check-outs is summarized in the next page (See Table 4.4):

Table 4.4 Mean Comparison for Consumer Attitudes Toward Automated Check-Outs

Consumer Attitudes Toward Automated Check-Outs		N	Mean	Std. Deviation
Allow me to shop more convenience	Heavy Users	20	5	0
	Medium Users	19	4.5263	0.51299
	Light Users	98	3.5102	0.6923
	Non-Users	83	2.2892	1.15326
	Total	220	3.2727	1.23798
Will make me more efficient while shopping	Heavy Users	20	4.75	0.44426
	Medium Users	19	4	0.4714
	Light Users	98	3.551	0.59417
	Non-Users	83	1.9639	0.86173
	Total	220	3.1	1.17002
Reduce the waiting time	Heavy Users	20	4.25	0.7864
	Medium Users	19	4.4737	0.61178
	Light Users	98	3.3163	1.001
	Non-Users	83	1.8313	0.74603
	Total	220	2.9409	1.27539
Are easy for me to use	Heavy Users	20	3.5263	1.02026
	Medium Users	19	3.45	0.82558
	Light Users	98	3.0714	1.23731
	Non-Users	83	2.5181	1.19308
	Total	220	2.9364	1.21841

Consumer Attitudes Toward Automated Check-Outs		N	Mean	Std. Deviation
Are reliable	Heavy Users	20	4.65	0.58714
	Medium Users	19	4.0526	0.52427
	Light Users	98	3.7857	0.66192
	Non-Users	83	2.3735	0.92011
	Total	220	3.3545	1.09866
Will work well	Heavy Users	20	4.7	0.47016
	Medium Users	19	4	0.66667
	Light Users	98	3.7857	0.72154
	Non-Users	83	2.5663	1.07287
	Total	220	3.4273	1.11001
Will have a faultless result	Heavy Users	20	4.55	0.51042
	Medium Users	19	4.2632	0.73349
	Light Users	98	3.9898	0.79294
	Non-Users	83	2.6145	1.39539
	Total	220	3.5455	1.27596
Will be entertaining	Heavy Users	20	3.7368	0.93346
	Medium Users	19	3.6	1.09545
	Light Users	98	2.9184	1.11848
	Non-Users	83	2.6506	1.27292
	Total	220	2.95	1.20965
Will be enjoyable	Heavy Users	20	3.55	0.94451
	Medium Users	19	3.4737	0.96427
	Light Users	98	3.0102	1.231
	Non-Users	83	2.6627	1.21251
	Total	220	2.9682	1.21026
I want to take care of my matters.	Heavy Users	20	3.6	0.99472
	Medium Users	19	3.5263	1.02026
	Light Users	98	3.3878	1.257
	Non-Users	83	2.6988	1.34105
	Total	220	3.1591	1.29529
I want to avoid problems by doing on my own.	Heavy Users	20	3.65	0.81273
	Medium Users	19	3.5263	0.96427
	Light Users	98	3.102	1.37346
	Non-Users	83	2.6506	1.32916
	Total	220	3.0182	1.32059

Furthermore, results showing in Posthoc Multiple Comparisons that have been compared mean difference among users and non-users are seen to be statically significant (p value <0.05) except for attitudes such as "Automated check-uuts are user-friendly." and "I am using automated check-outs because I want to make my own choices and decisions."

4.3.5 Factors Influence Customers Using Automated Check-Outs

To determine the importance factors that influence users which are classified into 3 groups – heavy users who always use the machine (100%) , medium users who sometimes use (70%) and light users who rarely use or use automated check-outs (30%) and also evaluate which factors influence non-users for their adoption and convert to use the machine, an analysis of variance or ANOVA test was employed. Factors such as "technology enhancement", "image enhancement", "result demonstrability", "social support", "new technology adoption", "feel embarrassment if they don't know how to use" and "perceive as a complexity task" were tested significance among all type of users regardless their frequency of using the machine. Results revealed that there is a significant difference between those factors "technology enhancement", "social support", "new technology adoption", and "perceive as a complexity task" (P Value=0.00) and "result demonstrability" (P Value=0.001) *(See Appendix D :Factors influence customers using automated check-outs).*Nevertheless, non-users have a positive feeling on the reliable result but they perceive that using this technology is a complexity task which not easy for them to adopt. That explains why they have a low intension to enhance in technology skills and this makes them feel not confident because they are not sure how to use it correctly. A mean comparison for factors influence customers to use automated check-outs are shown in (See Table 4.5)

Table 4.5 Mean Comparison for Factors Influence to Use Automated Check-Outs

Factors influence to use automated check-outs.		N	Mean	Std. Deviation
I can enhance my technology skills.	Heavy Users	20	4.3000	.57124
	Medium Users	19	4.1579	.60214
	Light Users	98	3.4898	1.50768
	Non-Users	83	2.2048	.95966
	Total	220	3.1364	1.41729
I can have an image enhancement.	Heavy Users	20	3.8500	1.59852
	Medium Users	19	3.1053	.80930
	Light Users	98	3.6327	1.62701
	Non-Users	83	3.2289	1.51678
	Total	220	3.4545	1.53876
They show a result demonstrability.	Heavy Users	20	3.6500	.58714
	Medium Users	19	4.4211	.50726
	Light Users	98	3.6837	.93717
	Non-Users	83	3.9880	.80386
	Total	220	3.8591	.85643
I have a social support (friends/families).	Heavy Users	20	4.5000	.82717
	Medium Users	19	3.5789	.96124
	Light Users	98	3.2857	.96324
	Non-Users	83	3.1084	1.27845
	Total	220	3.3545	1.14347
I can adopt to the new technology easily.	Heavy Users	20	4.6000	.50262
	Medium Users	19	3.7895	.53530
	Light Users	98	3.4694	1.23692
	Non-Users	83	2.4217	.96424
	Total	220	3.2045	1.24195
I feel embarrassment if I do not know how to use.	Heavy Users	20	3.0500	.75915
	Medium Users	19	3.2632	.73349
	Light Users	98	2.9388	1.18249
	Non-Users	83	3.1325	1.12370
	Total	220	3.0500	1.09472
It is not a complexity task.	Heavy Users	20	4.8000	.41039
	Medium Users	19	4.2632	.56195
	Light Users	98	3.8061	1.57728
	Non-Users	83	2.2289	.84573
	Total	220	3.3409	1.49799

4.3.6 Barriers to the Adoption of Non-Users

According to the finding, the most important reason why non-users do not use automated check-outs is they are afraid that service staff will lose their jobs for 41% and followed up by they like to talk to the service staff for any promotions or redeeming membership points account for 28.9%. Packing services and no machine available are almost rated with 12% and 13% respectively (See Table4.6):

Table 4.6 Reasons for Not Using Automated Check-Outs

Reasons for not using	N	%	Valid %	Cumulative%
I like to talk to the service staff.	24	10.9	28.9	28.9
I need packing services.	12	5.5	14.5	43.4
I am afraid that the service staff will lose their jobs.	34	15.5	41.0	84.3
There is no machine avaiable.	13	5.9	15.7	100.0
Total	83	37.7	100.0	

In terms of identifying barriers to the adoption of using automated check-outs, non-users have rated 41% for their technology anxiety and they scare to use. In addition to this, they do not want to delay other customers (39.8%) if they do not know how to use effectively and may take longer time which leads to increase longer queue. Bad experience in the past and concerns for the security are only 13.3% and 6% repectively (See Table 4.7):

Table 4.7 Barriers to the Adoption to Use Automated Check-Outs

Barriers to the apoption	N	%	Valid %	Cumulative%
I have a technology anxiety and scare to use.	34	15.5	41.0	41.0
I have a bad experience in the past	11	5.0	13.3	54.2
I do not want to delay other customers.	33	15.0	39.8	94.0
I am not sure the security of sharing personal data through the machine.	5	2.3	6.0	100.0
Total	83	37.7	100.0	

CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The overall objective of this research is to investigate customer attitudes and compare with the adoption of using automated check-outs.

Group of users were separated according to their adoption intention. Users were divided into heavy users: those who always use automated check-outs as usual, medium users: those who sometimes use automated check-outs when availability, light users: those who rarely use and prefer to have a personal service more than a self-service and non-user: those who have never used automated check-outs at all. Results revealed that perceived usefulness (convenience, more efficient and reduce waiting time) and reliability (reliable, work well and have a faultless result) were the most important factors that show the significant difference between users and non-users. Perceived waiting time relates to the length of queue. When choosing between using automated check-outs and personal service check-outs, customers tend to compare queues and look for the shorter one to increase their convenience and reduce their wasting time. This attitude has established the intension to use. Reliability refers to trustable results which reflect to positive attitudes for both users and non-users. However, non-users tend to have barriers such as new technology adoption and perceived task complexity. Therefore, they rejected to adopt the self-service option. In addition to this, when comparing users and non-users, those might find automated check-outs are easy to use and enjoyable (entertaining and enjoyable) would help increase the likelihood of the adoption.

In terms of factors that influencing customers to use self-service technology. Users tend to satisfy with their enhancement on technology and easier to adopt. Their social support also played an important role between users and non-users to show the significant difference. Customers who had social influencers such as friends and families tend to be use automated check-outs more often.

Nevertheless, non-users who perceived that using automated check-outs considered as a complexity task can be reflected in barriers to self-service acceptance such as technology anxiety and they do not want to delay other customers due to lack of confidence and scare to use the technology. However, there were interesting findings of choosing the personal service option over the self-service option, the result revealed that not only they prefer to communicate with the service staff but also afraid that the service staff will lose their jobs. Therefore, the barrier of adoption process may take in wider view not only for the limitation of technology knowledge but also the preference choice of human interaction. In summary, customers have never changed the way they think of high-tech low touch, therefore the adoption factors may have their interpersonal issues regardless the ability to use a technology.

5.2 Recommendations

5.2.1 Improvement of Automated Check-Outs

Due to the positive intension to use of non-users in easy to use and enjoyable. Supermarkets must pay special attention to increase confidence to customers to make them feel comfortable and convenience for example providing clear instructions, using a simulation and designing user-friendly technologies that can uplift automated check-outs to be further improved to provide user-friendly environment and help reducing a technology anxiety.

Furthermore, firms should be more strategically in locating automated kiosks to avoid embarrassment in public because the founded insights from non-users are, they do not want to delay other customers if they cannot perform to use it faster, this may take longer waiting line. Therefore, to further improvement and increase ease of use, firm may study for the self-service zone where can reduce the barrier of using.

Improve in technology can be achieved by collaborating with customers from the design process to confirm their skills and follow their feedbacks and comments. Automated check-outs will be widely used if this is designed by customers in order to reduce technical challenges especially for reducing the complexity and increasing the user's friendliness and users experience.

This will allow them to understand the process of using it which can then help increase the likelihood of numbers of acceptance when they are confident to use and find the use of automated check-outs is easy and enjoyable.

5.2.2 Marketing Communication Campaigns

Decide to launch marketing communication campaigns to encourage the initial trial. It can be done by offering small gifts for example grocery bags, discount coupons or points collection upon the completion of checking out by automated check-outs.

By encouraging every time customers come to supermarkets can strengthen the frequency of use and increase the perception of "co-creation" process to allow customers to have the ability to control and be part of the firm environment. This will help not only retaining users but also help increasing the frequency of use for all groups of users who have a high positive attitude towards control factors.

Furthermore, marketing campaigns can create a positive word of mouth and help connecting non-users to a trail adoption due to the influence from social supports from friends and families and prevent the bad experience for adopting which make them reject to use in the future.

Finally, firms need to communicate effectively regarding customers concern that the service staff will lose their jobs such as transfer them to help facilitate at the self-checkout stations.

5.3 Limitations of The Study

    Due to limited time and resources, there are some limitations to the study. The followings are the limitations that need to be noted in this study.

    a) Respondents of in-depth interviews were recruited through personal connection using a non-probability sampling technique based on a convenience method. Therefore, selected interviewees might not be good representatives of the whole target population.

    b) Respondents of quantitative research of this study were recruited online via social media platforms such as Facebook Messenger, Line massager where using a non-probability sampling based on a snowball technique. The sample size is only 220 qualified respondents.

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APPENDICES

APPENDIX A

Online Survey

Section 1: Screening Question

1. Where do you currently reside?

a. Bangkok

b. Not in Bangkok

2.Do you purchase any grocery products in the supermarket in the last 1 month?

a. Yes

b. No

Section 2: Consumers' Behavior in shopping in the supermarket

3. How often do you purchase grocery products?

a. Less than once a month

b. Around 2-3 time per month

c. Around 1 time per week

d. Around 2-3 time per week

4. Have you ever used an Automated Check-Out?

a. I always use an automated check-out.

b. I always use an automated check-out when there are employees available to help.

c. I sometimes use an automated check-out.

d. I never used an automated check-out. I normally go directly to the cashier counter.

5. How many items per one-time purchase?

a. Less than 5

b. 5-10

c. 11-15

d. More than 15

Section 3: Consumers' Attitudes Toward Automated Check-Outs

Now I would like to know your opinions of using automated check-outs in supermarkets regardless of usage frequency.

On a scale 1-5 (Completely Disagree-Completely Agree), please rate these following factors;

6. "**Perceived Usefulness**"

Automated check-outs:	1	2	3	4	5
6.1 Allow me to shop more convenience.					
6.2 Will make me more efficient while shopping.					
6.3 Reduce the waiting time.					

7. "**Ease of use**"

Automated check-outs:	1	2	3	4	5
7.1 Are easy for me to use.					
7.2 Are user-friendly.					

8. "**Reliability**"

Automated check-outs:	1	2	3	4	5
8.1 Are reliable.					
8.2 Will work well.					
8.3 Will have a faultless result.					

9. "**Enjoyable**"

Automated check-outs:	1	2	3	4	5
9.1 Will be entertaining.					
9.2 Will be enjoyable.					

10. "**Control**"

Automated check-outs:	1	2	3	4	5
10.1 I want to take care of my matters.					
10.2 I want to avoid problems by doing on my own.					
10.3 I want to make my own choices and decisions.					

11. Some people use automated check-outs all the time, however some are <u>not.</u>

I would like to know how often do you use automated check-outs.

a. I tend to always use automated check-outs. (100%)

b. I sometimes use automated check-outs. (70%)

c. I rarely use automated check-outs. (30%)

d. I do not use automated check-outs. (0%)

12. On a scale 1-5 (Completely Disagree-Completely Agree), please rate the factor influences you to use automated check-outs.

I use automated check-outs because:	1	2	3	4	5
12.1 I can enhance my technology skills.					
12.2 I can have an image enhancement.					
12.3 They show a result demonstrability.					
12.4 I have a social support (friends/families).					
12.5 I can adopt to the new technology easily.					
12.6 I feel embarrassment if I do not know how to use.					
12.7 It is not a complexity task.					

13. Do you know that you will receive the same benefits (eg. Point Collections) for both automated check-outs and cashier check-outs?

a. Yes

b. No

14. Do you use automated check-outs when the queue is long?

a. Yes

b. No

15. You said you do not use automated check-outs, please tell me your reason.

(One Answer)

a. I like to talk to the service staff.

b. I need packing services.

c. I am afraid that the service staff will lose their jobs.

d. There is no self-service available.

16. What factors make you unwilling to try an automated check-out? (One Answer)

a. I have a technology anxiety and scare to use.

b. I had a bad experience in the past.

c. I do not want to delay other customers.

d. I not sure the security of sharing personal data through the machine.

Part 4: Demographic Questions

17. Gender

a. Male

b. Female

18.Age

a. 18-24

b. 25-30

c. 31-35

d. 35-40

e. 41-50

19. Highest level of education

a. Below High School

b. High school

c. Vocational certificate/Diploma/associate degree

d. Bachelor's degree

e. Master's degree

f. Above master's degree

APPENDIX B

Relationship between User Profiles and

Different Purchase Characteristics

Chi-Square Tests				
	Pearson Chi-Square	Likelihood Ratio	Linear-by-Linear Association	N of Valid Cases
Value	38.641[a]	35.303	.289	220
df	9	9	1	
Asymp. Sig. (2-sided)	.000	.000	.591	

a. 4 cells (25.0%) have expected count less than 5. The minimum expected count is 1.21.

APPENDIX C

Differences in Attitudes Toward Automated Check-Outs

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Allow me to shop more convenience	Between Groups	175.349	3	58.450	78.766	.000
	Within Groups	160.287	216	.742		
	Total	335.636	219			
Will make me more efficient while shopping	Between Groups	196.914	3	65.638	137.800	.000
	Within Groups	102.886	216	.476		
	Total	299.800	219			
Reduce the waiting time	Between Groups	194.913	3	64.971	86.993	.000
	Within Groups	161.319	216	.747		
	Total	356.232	219			
Are easy for me to use	Between Groups	28.199	3	9.400	6.838	.000
	Within Groups	296.910	216	1.375		
	Total	325.109	219			
Are user-friendly	Between Groups	6.522	3	2.174	2.039	.109
	Within Groups	230.364	216	1.067		
	Total	236.886	219			
Are reliable	Between Groups	140.926	3	46.975	82.213	.000
	Within Groups	123.419	216	.571		
	Total	264.345	219			
Will work well	Between Groups	112.751	3	37.584	51.679	.000
	Within Groups	157.086	216	.727		
	Total	269.836	219			
Will have a faultless result	Between Groups	121.259	3	40.420	37.106	.000
	Within Groups	235.287	216	1.089		
	Total	356.545	219			
Will be entertaining	Between Groups	27.751	3	9.250	6.826	.000
	Within Groups	292.699	216	1.355		
	Total	320.450	219			
Will be enjoyable	Between Groups	19.546	3	6.515	4.672	.003
	Within Groups	301.231	216	1.395		
	Total	320.777	219			
I want to take care of my matters.	Between Groups	29.160	3	9.720	6.207	.000
	Within Groups	338.272	216	1.566		
	Total	367.432	219			
I want to avoid problems by doing on my own.	Between Groups	24.793	3	8.264	4.998	.002
	Within Groups	357.134	216	1.653		
	Total	381.927	219			
I want to make my own choices and decisions.	Between Groups	1.174	3	.391	.471	.703
	Within Groups	179.535	216	.831		
	Total	180.709	219			

Posthoc Multiple Comparisons							
Attitudes Toward Automated Check-Outs				Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Usefulness	Allow me to shop more convenience	Heavy Users	Medium Users	.47368	.27597	.088	-.0703	1.0176
			Light Users	1.48980*	.21137	.000	1.0732	1.9064
			Non-Users	2.71084*	.21458	.000	2.2879	3.1338
		Medium Users	Heavy Users	-.47368	.27597	.088	-1.0176	.0703
			Light Users	1.01611*	.21594	.000	.5905	1.4417
			Non-Users	2.23716*	.21908	.000	1.8053	2.6690
		Light Users	Heavy Users	-1.48980*	.21137	.000	-1.9064	-1.0732
			Medium Users	-1.01611*	.21594	.000	-1.4417	-.5905
			Non-Users	1.22105*	.12850	.000	.9678	1.4743
		Non-Users	Heavy Users	-2.71084*	.21458	.000	-3.1338	-2.2879
			Medium Users	-2.23716*	.21908	.000	-2.6690	-1.8053
			Light Users	-1.22105*	.12850	.000	-1.4743	-.9678
	Will make me more efficient while shopping.	Heavy Users	Medium Users	.75000*	.22110	.001	.3142	1.1858
			Light Users	1.19898*	.16934	.000	.8652	1.5328
			Non-Users	2.78614*	.17192	.000	2.4473	3.1250
		Medium Users	Heavy Users	-.75000*	.22110	.001	-1.1858	-.3142
			Light Users	.44898*	.17300	.010	.1080	.7900
			Non-Users	2.03614*	.17552	.000	1.6902	2.3821
		Light Users	Heavy Users	-1.19898*	.16934	.000	-1.5328	-.8652
			Medium Users	-.44898*	.17300	.010	-.7900	-.1080
			Non-Users	1.58716*	.10295	.000	1.3842	1.7901
		Non-Users	Heavy Users	-2.78614*	.17192	.000	-3.1250	-2.4473
			Medium Users	-2.03614*	.17552	.000	-2.3821	-1.6902
			Light Users	-1.58716*	.10295	.000	-1.7901	-1.3842
	Reduce the waiting time	Heavy Users	Medium Users	-.22368	.27686	.420	-.7694	.3220
			Light Users	.93367*	.21205	.000	.5157	1.3516
			Non-Users	2.41867*	.21527	.000	1.9944	2.8430
		Medium Users	Heavy Users	.22368	.27686	.420	-.3220	.7694
			Light Users	1.15736*	.21663	.000	.7304	1.5843
			Non-Users	2.64236*	.21979	.000	2.2092	3.0756
		Light Users	Heavy Users	-.93367*	.21205	.000	-1.3516	-.5157
			Medium Users	-1.15736*	.21663	.000	-1.5843	-.7304
			Non-Users	1.48500*	.12892	.000	1.2309	1.7391
		Non-Users	Heavy Users	-2.41867*	.21527	.000	-2.8430	-1.9944
			Medium Users	-2.64236*	.21979	.000	-3.0756	-2.2092
			Light Users	-1.48500*	.12892	.000	-1.7391	-1.2309

Posthoc Multiple Comparisons							
Attitudes Toward Automated Check-Outs			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Eas of Use	Are easy for me to use	Heavy Users	Medium Users	-.07632	.37560	.839	-.8166	.6640
			Light Users	.37857	.28767	.190	-.1884	.9456
			Non-Users	.93193*	.29205	.002	.3563	1.5076
		Medium Users	Heavy Users	.07632	.37560	.839	-.6640	.8166
			Light Users	.45489	.29389	.123	-.1244	1.0342
			Non-Users	1.00824*	.29817	.001	.4205	1.5959
		Light Users	Heavy Users	-.37857	.28767	.190	-.9456	.1884
			Medium Users	-.45489	.29389	.123	-1.0342	.1244
			Non-Users	.55336*	.17489	.002	.2086	.8981
		Non-Users	Heavy Users	-.93193*	.29205	.002	-1.5076	-.3563
			Medium Users	-1.00824*	.29817	.001	-1.5959	-.4205
			Light Users	-.55336*	.17489	.002	-.8981	-.2086
	Are user-friendly	Heavy Users	Medium Users	.03421	.33084	.918	-.6179	.6863
			Light Users	.29898	.25339	.239	-.2005	.7984
			Non-Users	.50663	.25724	.050	-.0004	1.0137
		Medium Users	Heavy Users	-.03421	.33084	.918	-.6863	.6179
			Light Users	.26477	.25887	.308	-.2455	.7750
			Non-Users	.47242	.26264	.073	-.0453	.9901
		Light Users	Heavy Users	-.29898	.25339	.239	-.7984	.2005
			Medium Users	-.26477	.25887	.308	-.7750	.2455
			Non-Users	.20765	.15405	.179	-.0960	.5113
		Non-Users	Heavy Users	-.50663	.25724	.050	-1.0137	.0004
			Medium Users	-.47242	.26264	.073	-.9901	.0453
			Light Users	-.20765	.15405	.179	-.5113	.0960

Posthoc Multiple Comparisons							
Attitudes Toward Automated Check-Outs			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Reliable	Are reliable	Heavy Users	Medium Users	.59737*	.24216	.014	.1201	1.0747
			Light Users	.86429*	.18547	.000	.4987	1.2299
			Non-Users	2.27651*	.18829	.000	1.9054	2.6476
		Medium Users	Heavy Users	-.59737*	.24216	.014	-1.0747	-.1201
			Light Users	.26692	.18948	.160	-.1066	.6404
			Non-Users	1.67914*	.19224	.000	1.3002	2.0580
		Light Users	Heavy Users	-.86429*	.18547	.000	-1.2299	-.4987
			Medium Users	-.26692	.18948	.160	-.6404	.1066
			Non-Users	1.41222*	.11276	.000	1.1900	1.6345
		Non-Users	Heavy Users	-2.27651*	.18829	.000	-2.6476	-1.9054
			Medium Users	-1.67914*	.19224	.000	-2.0580	-1.3002
			Light Users	-1.41222*	.11276	.000	-1.6345	-1.1900
	Will work well	Heavy Users	Medium Users	.70000*	.27320	.011	.1615	1.2385
			Light Users	.91429*	.20924	.000	.5019	1.3267
			Non-Users	2.13373*	.21243	.000	1.7150	2.5524
		Medium Users	Heavy Users	-.70000*	.27320	.011	-1.2385	-.1615
			Light Users	.21429	.21377	.317	-.2071	.6356
			Non-Users	1.43373*	.21688	.000	1.0063	1.8612
		Light Users	Heavy Users	-.91429*	.20924	.000	-1.3267	-.5019
			Medium Users	-.21429	.21377	.317	-.6356	.2071
			Non-Users	1.21945*	.12721	.000	.9687	1.4702
		Non-Users	Heavy Users	-2.13373*	.21243	.000	-2.5524	-1.7150
			Medium Users	-1.43373*	.21688	.000	-1.8612	-1.0063
			Light Users	-1.21945*	.12721	.000	-1.4702	-.9687
	Will have a faultless result	Heavy Users	Medium Users	.28684	.33436	.392	-.3722	.9459
			Light Users	.56020*	.25609	.030	.0555	1.0650
			Non-Users	1.93554*	.25998	.000	1.4231	2.4480
		Medium Users	Heavy Users	-.28684	.33436	.392	-.9459	.3722
			Light Users	.27336	.26162	.297	-.2423	.7890
			Non-Users	1.64870*	.26543	.000	1.1255	2.1719
		Light Users	Heavy Users	-.56020*	.25609	.030	-1.0650	-.0555
			Medium Users	-.27336	.26162	.297	-.7890	.2423
			Non-Users	1.37534*	.15569	.000	1.0685	1.6822
		Non-Users	Heavy Users	-1.93554*	.25998	.000	-2.4480	-1.4231
			Medium Users	-1.64870*	.26543	.000	-2.1719	-1.1255
			Light Users	-1.37534*	.15569	.000	-1.6822	-1.0685
Enjoy	Will be entertaining	Heavy Users	Medium Users	-.13684	.37293	.714	-.8719	.5982
			Light Users	.68163*	.28563	.018	.1187	1.2446
			Non-Users	.94940*	.28997	.001	.3779	1.5209
		Medium Users	Heavy Users	.13684	.37293	.714	-.5982	.8719
			Light Users	.81847*	.29180	.005	.2433	1.3936
			Non-Users	1.08624*	.29605	.000	.5027	1.6698
		Light Users	Heavy Users	-.68163*	.28563	.018	-1.2446	-.1187
			Medium Users	-.81847*	.29180	.005	-1.3936	-.2433
			Non-Users	.26776	.17365	.125	-.0745	.6100
		Non-Users	Heavy Users	-.94940*	.28997	.001	-1.5209	-.3779
			Medium Users	-1.08624*	.29605	.000	-1.6698	-.5027
			Light Users	-.26776	.17365	.125	-.6100	.0745
	Will be enjoyable	Heavy Users	Medium Users	.07632	.37832	.840	-.6694	.8220
			Light Users	.53980	.28976	.064	-.0313	1.1109
			Non-Users	.88735*	.29416	.003	.3076	1.4671
		Medium Users	Heavy Users	-.07632	.37832	.840	-.8220	.6694
			Light Users	.46348	.29602	.119	-.1200	1.0469
			Non-Users	.81103*	.30034	.007	.2191	1.4030
		Light Users	Heavy Users	-.53980	.28976	.064	-1.1109	.0313
			Medium Users	-.46348	.29602	.119	-1.0469	.1200
			Non-Users	.34755*	.17616	.050	.0003	.6948
		Non-Users	Heavy Users	-.88735*	.29416	.003	-1.4671	-.3076
			Medium Users	-.81103*	.30034	.007	-1.4030	-.2191
			Light Users	-.34755*	.17616	.050	-.6948	-.0003

Posthoc Multiple Comparisons								
Attitudes Toward Automated Check-Outs				Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Control	I want to take care of my matters.	Heavy Users	Medium Users	.07368	.40091	.854	-.7165	.8639
			Light Users	.21224	.30706	.490	-.3930	.8175
			Non-Users	.90120*	.31172	.004	.2868	1.5156
		Medium Users	Heavy Users	-.07368	.40091	.854	-.8639	.7165
			Light Users	.13856	.31370	.659	-.4797	.7569
			Non-Users	.82752*	.31827	.010	.2002	1.4548
		Light Users	Heavy Users	-.21224	.30706	.490	-.8175	.3930
			Medium Users	-.13856	.31370	.659	-.7569	.4797
			Non-Users	.68896*	.18668	.000	.3210	1.0569
		Non-Users	Heavy Users	-.90120*	.31172	.004	-1.5156	-.2868
			Medium Users	-.82752*	.31827	.010	-1.4548	-.2002
			Light Users	-.68896*	.18668	.000	-1.0569	-.3210
	I want to avoid problems by doing on my own	Heavy Users	Medium Users	.12368	.41194	.764	-.6882	.9356
			Light Users	.54796	.31550	.084	-.0739	1.1698
			Non-Users	.99940*	.32030	.002	.3681	1.6307
		Medium Users	Heavy Users	-.12368	.41194	.764	-.9356	.6882
			Light Users	.42427	.32232	.189	-.2110	1.0596
			Non-Users	.87571*	.32702	.008	.2312	1.5203
		Light Users	Heavy Users	-.54796	.31550	.084	-1.1698	.0739
			Medium Users	-.42427	.32232	.189	-1.0596	.2110
			Non-Users	.45144*	.19181	.019	.0734	.8295
		Non-Users	Heavy Users	-.99940*	.32030	.002	-1.6307	-.3681
			Medium Users	-.87571*	.32702	.008	-1.5203	-.2312
			Light Users	-.45144*	.19181	.019	-.8295	-.0734
	I want to make my own choices and decisions.	Heavy Users	Medium Users	.06842	.29207	.815	-.5073	.6441
			Light Users	.23061	.22370	.304	-.2103	.6715
			Non-Users	.14578	.22710	.522	-.3018	.5934
		Medium Users	Heavy Users	-.06842	.29207	.815	-.6441	.5073
			Light Users	.16219	.22853	.479	-.2883	.6126
			Non-Users	.07736	.23186	.739	-.3796	.5344
		Light Users	Heavy Users	-.23061	.22370	.304	-.6715	.2103
			Medium Users	-.16219	.22853	.479	-.6126	.2883
			Non-Users	-.08483	.13600	.533	-.3529	.1832
		Non-Users	Heavy Users	-.14578	.22710	.522	-.5934	.3018
			Medium Users	-.07736	.23186	.739	-.5344	.3796
			Light Users	.08483	.13600	.533	-.1832	.3529

*. The mean difference is significant at the 0.05 level.

APPENDIX D

Factors Influence Customers Using Automated Check-Out

ANOVA						
Factors influence to use automated check-outs.		Sum of Squares	df	Mean Square	F	Sig.
I can enhance my technology skills.	Between Groups	131.175	3	43.725	30.591	.000
	Within Groups	308.734	216	1.429		
	Total	439.909	219			
I can have an image enhancement.	Between Groups	12.780	3	4.260	1.819	.145
	Within Groups	505.766	216	2.342		
	Total	518.545	219			
They show a result demonstrability.	Between Groups	11.268	3	3.756	5.432	.001
	Within Groups	149.363	216	.691		
	Total	160.632	219			
I have a social support (friends/families).	Between Groups	32.690	3	10.897	9.279	.000
	Within Groups	253.656	216	1.174		
	Total	286.345	219			
I can adopt to the new technology easily.	Between Groups	103.188	3	34.396	31.668	.000
	Within Groups	234.607	216	1.086		
	Total	337.795	219			
I feel embarrassment if I do not know how to use.	Between Groups	2.641	3	.880	.732	.534
	Within Groups	259.809	216	1.203		
	Total	262.450	219			
It is not a complexity task.	Between Groups	182.581	3	60.860	42.564	.000
	Within Groups	308.851	216	1.430		
	Total	491.432	219			

Posthoc Multiple Comparisons							
Factors influence to use automated check-outs.			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
I can enhance my technology skills.	Heavy Users	Medium Users	.14211	.38301	.711	-.6128	.8970
		Light Users	.81020*	.29334	.006	.2320	1.3884
		Non-Users	2.09518*	.29780	.000	1.5082	2.6822
	Medium Users	Heavy Users	-.14211	.38301	.711	-.8970	.6128
		Light Users	.66810*	.29969	.027	.0774	1.2588
		Non-Users	1.95308*	.30405	.000	1.3538	2.5524
	Light Users	Heavy Users	-.81020*	.29334	.006	-1.3884	-.2320
		Medium Users	-.66810*	.29969	.027	-1.2588	-.0774
		Non-Users	1.28498*	.17834	.000	.9335	1.6365
	Non-Users	Heavy Users	-2.09518*	.29780	.000	-2.6822	-1.5082
		Medium Users	-1.95308*	.30405	.000	-2.5524	-1.3538
		Light Users	-1.28498*	.17834	.000	-1.6365	-.9335
I can have an image enhancement.	Heavy Users	Medium Users	.74474	.49022	.130	-.2215	1.7110
		Light Users	.21735	.37546	.563	-.5227	.9574
		Non-Users	.62108	.38116	.105	-.1302	1.3724
	Medium Users	Heavy Users	-.74474	.49022	.130	-1.7110	.2215
		Light Users	-.52739	.38358	.171	-1.2834	.2286
		Non-Users	-.12365	.38916	.751	-.8907	.6434
	Light Users	Heavy Users	-.21735	.37546	.563	-.9574	.5227
		Medium Users	.52739	.38358	.171	-.2286	1.2834
		Non-Users	.40374	.22826	.078	-.0462	.8536
	Non-Users	Heavy Users	-.62108	.38116	.105	-1.3724	.1302
		Medium Users	.12365	.38916	.751	-.6434	.8907
		Light Users	-.40374	.22826	.078	-.8536	.0462
They show a result demonstrability.	Heavy Users	Medium Users	-.77105*	.26640	.004	-1.2961	-.2460
		Light Users	-.03367	.20404	.869	-.4358	.3685
		Non-Users	-.33795	.20714	.104	-.7462	.0703
	Medium Users	Heavy Users	.77105*	.26640	.004	.2460	1.2961
		Light Users	.73738*	.20845	.000	.3265	1.1482
		Non-Users	.43310*	.21148	.042	.0163	.8499
	Light Users	Heavy Users	.03367	.20404	.869	-.3685	.4358
		Medium Users	-.73738*	.20845	.000	-1.1482	-.3265
		Non-Users	-.30428*	.12405	.015	-.5488	-.0598
	Non-Users	Heavy Users	.33795	.20714	.104	-.0703	.7462
		Medium Users	-.43310*	.21148	.042	-.8499	-.0163
		Light Users	.30428*	.12405	.015	.0598	.5488
I have a social support (friends/families).	Heavy Users	Medium Users	.92105*	.34716	.009	.2368	1.6053
		Light Users	1.21429*	.26589	.000	.6902	1.7384
		Non-Users	1.39157*	.26994	.000	.8595	1.9236
	Medium Users	Heavy Users	-.92105*	.34716	.009	-1.6053	-.2368
		Light Users	.29323	.27164	.282	-.2422	.8286
		Non-Users	.47051	.27560	.089	-.0727	1.0137
	Light Users	Heavy Users	-1.21429*	.26589	.000	-1.7384	-.6902
		Medium Users	-.29323	.27164	.282	-.8286	.2422
		Non-Users	.17728	.16165	.274	-.1413	.4959
	Non-Users	Heavy Users	-1.39157*	.26994	.000	-1.9236	-.8595
		Medium Users	-.47051	.27560	.089	-1.0137	.0727
		Light Users	-.17728	.16165	.274	-.4959	.1413

Posthoc Multiple Comparisons							
Factors influence to use automated check-outs.			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
I can adopt to the new technology easily.	Heavy Users	Medium Users	.81053*	.33388	.016	.1525	1.4686
		Light Users	1.13061*	.25572	.000	.6266	1.6346
		Non-Users	2.17831*	.25960	.000	1.6666	2.6900
	Medium Users	Heavy Users	-.81053*	.33388	.016	-1.4686	-.1525
		Light Users	.32009	.26124	.222	-.1948	.8350
		Non-Users	1.36779*	.26505	.000	.8454	1.8902
	Light Users	Heavy Users	-1.13061*	.25572	.000	-1.6346	-.6266
		Medium Users	-.32009	.26124	.222	-.8350	.1948
		Non-Users	1.04770*	.15546	.000	.7413	1.3541
	Non-Users	Heavy Users	-2.17831*	.25960	.000	-2.6900	-1.6666
		Medium Users	-1.36779*	.26505	.000	-1.8902	-.8454
		Light Users	-1.04770*	.15546	.000	-1.3541	-.7413
I feel embarrassment if I do not know how to use.	Heavy Users	Medium Users	-.21316	.35135	.545	-.9057	.4794
		Light Users	.11122	.26910	.680	-.4192	.6416
		Non-Users	-.08253	.27319	.763	-.6210	.4559
	Medium Users	Heavy Users	.21316	.35135	.545	-.4794	.9057
		Light Users	.32438	.27492	.239	-.2175	.8662
		Non-Users	.13063	.27892	.640	-.4191	.6804
	Light Users	Heavy Users	-.11122	.26910	.680	-.6416	.4192
		Medium Users	-.32438	.27492	.239	-.8662	.2175
		Non-Users	-.19375	.16360	.238	-.5162	.1287
	Non-Users	Heavy Users	.08253	.27319	.763	-.4559	.6210
		Medium Users	-.13063	.27892	.640	-.6804	.4191
		Light Users	.19375	.16360	.238	-.1287	.5162
It is not a complexity task.	Heavy Users	Medium Users	.53684	.38308	.163	-.2182	1.2919
		Light Users	.99388*	.29340	.001	.4156	1.5722
		Non-Users	2.57108*	.29786	.000	1.9840	3.1582
	Medium Users	Heavy Users	-.53684	.38308	.163	-1.2919	.2182
		Light Users	.45704	.29974	.129	-.1338	1.0478
		Non-Users	2.03424*	.30411	.000	1.4348	2.6336
	Light Users	Heavy Users	-.99388*	.29340	.001	-1.5722	-.4156
		Medium Users	-.45704	.29974	.129	-1.0478	.1338
		Non-Users	1.57721*	.17838	.000	1.2256	1.9288
	Non-Users	Heavy Users	-2.57108*	.29786	.000	-3.1582	-1.9840
		Medium Users	-2.03424*	.30411	.000	-2.6336	-1.4348
		Light Users	-1.57721*	.17838	.000	-1.9288	-1.2256

BIOGRAPHY

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