The Influence of Demographic Factors and Customer Traits on Intention to Use Self-Service Checkout at Tesco Tebrau

Hairul Rizad Md Sapry[1(✉)], Nor Maisarah Zakaria[1], Abd Rahman Ahmad[2],
Noor Irdiana Ngadiman[1]
[1]Industrial Logistics, Malaysian Institute of Industrial Technology (UniKL MITEC),
Universiti Kuala Lumpur, Johor, Malaysia
[2]Faculty of Information Technology and Management, Universiti Tun Hussein Onn (UTHM),
Johor, Malaysia
hairulrizad@unikl.edu.my

Abstract—This research paper emphasizes the relationship between certain variables that influence the consumer's intention to use Self-Service Technologies (SST) in the retail sector. With the rapid growth of technology, various technological innovations are being introduced to make it easier for people to satisfy their needs and wants. One of the technologies that are very popular among customers is self-service checkout. However, previous studies on investigating the SST mainly focus on the technology adoption perspective and only a few studies have attempted to report from the consumer behavior perspective. As such, this paper aims to investigate the relationship between the customer's traits (technology anxiety, need for interaction, technology innovativeness, and demographics) towards the consumer intention to use SST. Two hundred answers were collected randomly among the Tesco customer in Malaysia. The data were then analyzed using SmartPls version 3 to validate the developed hypothesis which forms the foundation for the research model. The finding revealed that only technology anxiety, technology innovativeness, and demographics affect the consumer intention to use SST. The findings are important to the retailer to continue improving the current system in addressing 1. potential user (demographic), system complexity and safety (technology anxiety), and system features-interactive system (technology innovativeness) to give a different experience to the user as compared to traditional practice.

Keywords—supply chain management, self-service kiosk, customer intention

1   Introduction

Many service providers have implemented a technology known as Self-Service Technologies (SST) to provide their customers with convenient services to achieve or boost efficiency and satisfaction [1]. In addition, the goal is to provide consumers with access to services through modern and convenient [2]. Researchers and practitioners

alike have recognized the need to understand the effectiveness of these computer-based innovations for self-services. An important benefit of self-service technology has been its potential to reduce customer waiting times and improve customer service levels.

Responding to the growth of technology, retailers increasingly considering interactive and innovative technology interfaces as such SST for delivery of a better service. The SST indicates that individuals can just perform their tasks with the use of technology without getting direct personal help and support in sort of consumption [3]. Over the last five years, with these different forms of SST, self-service checkouts have evolved rapidly [4]. Self-service checkout is a modern electronic device that allows customers to scan, pack and pay for goods either on their own or with limited assistance from a cashier in retail stores.

Retail self-checkouts offer significant advantages to customers and retailers alike. Bitner et al., [5] said that for supermarkets, possible operating cost savings could be the major reason behind the deployment of a self-service checkout. Among consumers, speed is described as the primary reason for preferring self-checkouts to personal assistance in the retail setting [6]. Self-service checkouts seem to help please certain customers whenever there is a long line on manual cashier lanes. Consumers who may not want to deal with cashiers also use self-checkout. In addition, offering more payment choices, greater privacy, and control, and more flexibility are the key reasons for using self-service checkouts.

However, some are lacking in the use of this self-service checkout or any other type of off SST due to some reason and determinants. This seems like it is influenced by the personal different characteristics of customers for not being interested to use this SST. Individual differences have been categorized into demographic or socio-economic factors and consumer personality traits.

Demographic and socio-economic variables have long been seen in the profile of consumer groups, as firms can present more accurate service and marketing adjustments related to specific target market segments. For instance, given that early adopter of new technology products are usually young and male customers, marketers can represent a scenario in which young people or males are constantly using new technology products in advertising. In addition to demographic factors, consumer personality traits have a particular impact on the adoption of SST.

This SST is well known due to its perception of faster, ease of use, and reliability, and functionality but it is still lacking in consumer behavior to use this kind of technology. This has been studied previously by the worldwide researcher on several factors or determinants such as in terms of technology readiness and adoption. However, this study will focus on another dimension specifically on customer traits dimension-technology anxiety. Need for interaction [7] Technology innovativeness [8] and demographics [7].

2   Research model and hypothesis

This study is intended as an analysis to understand the linkage between different consumer traits and demographic factors to the intention to use self-service checks out in the retail environment in Malaysia.
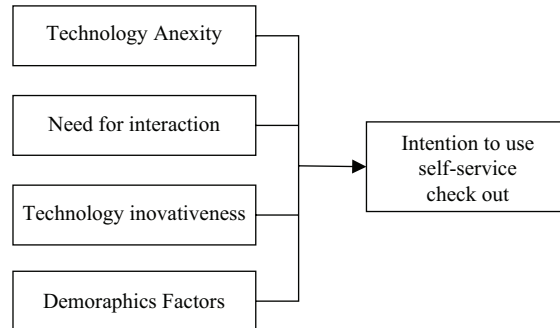
Fig. 1. Conceptual framework

The study has adopted a model developed by Hyun-Joo et al., [9] which has been modified and refined to facilitate the development of the research hypothesis as follows:

i.   H1 – There is a relationship between demographic factors (a. gender, b. age, c. education) and the intention to use the self-service checkout.
ii. H2 – There is a relationship between consumer technology anxiety and the intention to use self-service checkout.
iii. H3 – There is a relationship between the consumer need for interaction and the intention to use the self-service checkout.
iv. H4 – There is a relationship between consumer technology innovativeness and the intention to use the self-service checkout.

3   Methodology

A purposive sampling method was used to collect two hundred questionnaires distributed among the Tesco customer over a period of one month. The data obtained from the survey were analyzed using the partial least square (SmartPLS) 3.0 [10]. Three types of analysis namely descriptive analysis, a test of the measurement model, and a test of the structural model were carried out for this study.

4   Results and findings

4.1   Demographic profiles of respondents

Table 1 displays the detailed characteristics of respondents in this study. The respondents in this study are different in the form of gender, age group, educational level. Based on Table 1, most respondents who participated in this study were female which represents 61.5 percent of the total respondent. Concerning the age group, most respondents were aged below 40 years old that represent about 65% of the total respondents. The remaining age group is consisting of between 40-49 years old which followed by

the age group above 50 years old. Concerning educational level, most of the respondents were degree holders with 65 percent. Then, it was followed by a diploma and postgraduate degree.

Table 1. Respondent profile

Demographic Traits	Frequency	Percentage
Gender		
Male	77	38.5
Female	123	61.5
Age		
18-21	6	3
22-29	70	35
30-39	54	27
40-49	38	19
50 and above	32	16
Education		
High School or less	3	1.5
Diploma	55	27.5
Bachelor's Degree	130	65
Master's or Doctoral Degree	12	6

4.2 Assessment of outer model

Analysis of the outer model is used to determine the appropriateness of the theoretically defined construct. The measurement model is examined to ensure the survey questionnaire determines the variables that were supposed to measure, and simultaneously makes sure that the instrument is reliable. In this process, three things are investigated which are factor loadings, composite reliability (CR), and average variance extracted (AVE).

Construct validity, convergent validity, discriminant validity, and reliability. As suggested by Hair et al., [11] the extracted output from SmartPls was analyzed to calculate the average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha, as shown in Table 2. All constructs achieved a higher Cronbach's Alpha of more than 0.7 which was recommended by Hair et al., [11][12]. AVE and composite reliability (CR) result also shows all the constructs have achieved the minimum requirement for each parameter [11][13][14]. In general, the results show that all the five constructs technology anxiety, need for interaction, technology innovativeness, demographics, and intention to use are all valid measures of their respective constructs according to their parameter estimates and are statistically significant at $p < 0.05$.

Table 2. Construct validity, dimensionality, reliability, and item loadings

Construct	Item	Loading	AVE	CR	R^2	Cronbach's Alpha
Technology Anxiety	TA1	0.92	0.799	0.922		0.875
	TA2	0.933				
	TA3	0.852				
Need for interaction	NFI	0.859	0.701	0.875		0.800
	NF2	0.917				
	NF3	0.724				
Technology Innovativeness	TI1	0.92	0.799	0.922	0.502	0.875
	TI2	0.933				
	TI3	0.825				
Demographics	D1	0.561	0.605	0.816		0.754
	D2	0.866				
	D3	0.866				
Intention to use	ITU1	0.864	0.571	0.798		0.735
	ITU2	0.725				
	ITU3	0.664				

Further, the discriminant validity of the constructs was examined by following the Fornell and Larcker [15] criterion. This test is used to compare the correlations between constructs and the square root of the AVE for each construct applied in this study. The results in Table 3 show that all the values (diagonals) were higher than the conforming row and column values. Hence, it demonstrates that there is no discriminant validity issue for this study.

Table 3. Construct validity, dimensionality, reliability, and item loadings

	Demo	ITU	NFI	TA	TI
Demo	0.778				
ITU	0.513	0.756			
NFI	0.285	0.330	0.837		
TA	0.330	0.647	0.527	0.984	
TI	0.461	0.556	0.102	0.536	0.830

Note: Values in the diagonal (bolded) signify the square root of the AVE while the off-diagonals signify the correlations; Demo(Demographics), ITU (Intention to use), NFI (Need for interaction) TA (Technology Anxiety), TI (Technology Innovativeness).

4.3 Assessment of inner model

Then, the next step is the assessment of the structural model (inner model) for examining the hypothesized relationships between constructs in the intention to use by the respondent towards the self-service checkout. About R^2, it shows that 50.2 percent of

intention to use self-service check out is explained in this model (Table 2). The R^2 value confirms a moderate model according to Chin [16].

4.4 Hypotheses verification

As illustrated in Table 4, the results indicate that only three hypotheses (H1, H3, and H4) have supported the intention to use the self-service checkout.

Table 4. Summary of hypotheses testing results

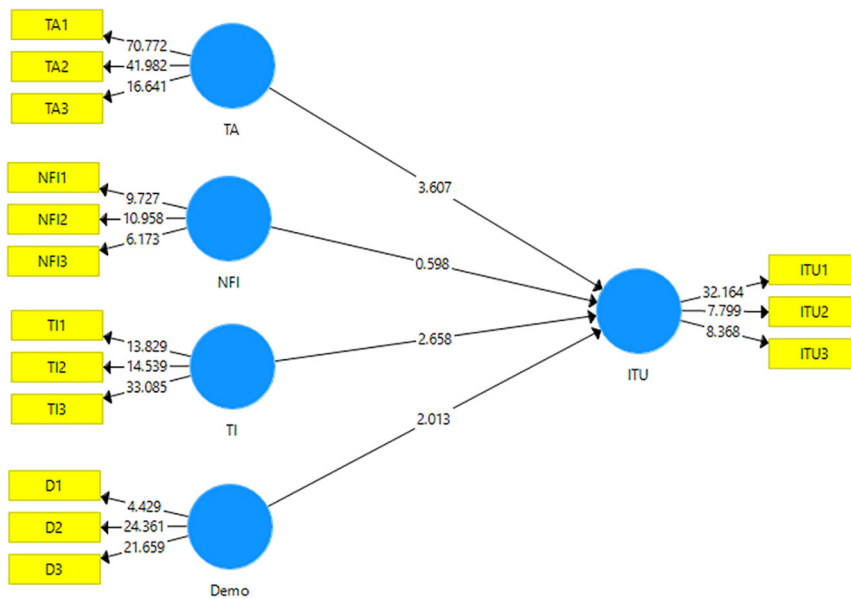| Hypothesis	Relationship	Std Beta	Std Error	t-Value	Decision
HI	Demo -> ITU	0.170	0.084	2.013	Supported
H2	NFI -> ITU	0.700	0.084	0.598	Not supported
H3	TA -> ITU	0.382	0.108	3.607	Supported
H4	TI -> ITU	0.272	0.100	2.658	Supported

Note: **p<0.01; *p<0.05.

Fig. 2. Graphical representation of inner model after the bootstrapping procedure

5 Conclusion

This study provides an insight into the intention to use self-service checkout in Malaysia. The model was developed to facilitate the investigation of a probable relationship between technology anxiety, need for interaction, technology

Innovativeness, and demographics of the respondents. The findings found that technology anxiety, technology innovativeness, and demographics, pose a positive and significant direct effect on the intention to use the self-service checkout, with technology anxiety having become the strongest effect. The finding supported [17][18] that suggested technology anxiety is more influential in adopting self-service technology and associated to the consumers who are less technologically anxious are more likely to use self-service technology. In this study, the Q2 value for intention to use the self-service checkout ($Q^2 = 0.246$) is more than 0. Hence, the model of this study has sufficient or large predictive relevance [11][19].

In response to the rapid development of technology, self-service technology is potentially to take over a human role in the service facility, to further minimize the costs and improve service efficiency, not only for the company, but it can also save time for consumers. Therefore, this study is important to identify and assess the insight of customers to understand the difference in demographics towards technology anxiety and technology innovativeness to facilitate the continued creation of this kind of technology in the future.

Long lines have always been an inconvenience and a pain point in the shopping experience. Understanding the technology innovations by developing an interactive self-checkout kiosk will make the retailer business more dynamic and help minimize the bottleneck that is the checkout experience at many businesses. Self-service checkout also can be customizable in creating additional value to the consumer by suggesting a complimentary item or a strong value upsell in a way that does not slow down their checkout process. Customers who take advantage of these point-of-sale offers may help increase the retailer per-customer revenues.

Self-checkout has also become closely associated with safety, which will continue to be paramount.

In examining how the pandemic has shifted attitudes towards self-checkout, the increased and overall use of self-service checkout kiosks shows there is likely a pervasive attitude among consumers that kiosks provide a safe shopping option—and one potentially perceived as safer than interacting with a cashier.

6   Acknowledgment

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8   Authors

Hairul Rizad Md Sapry, Industrial Logistics, Universiti Kuala Lumpur, Malaysian Institute of Industrial Technology (UniKL MITEC), 81750, Masai, Johor. Malaysia.

Nor Maisarah Zakaria, Industrial Logistics, Universiti Kuala Lumpur, Malaysian Institute of Industrial Technology (UniKL MITEC), 81750, Masai, Johor, Malaysia. E-mail: normaesarah@gmail.com

Abd Rahman Ahmad, Faculty of Information Technology and Management, Universiti Tun Hussein Onn (UTHM), 86400 Parit Raja, Johor, Malaysia. E-mail: arahman@uthm.edu.my

Noor Irdiana Ngadiman, Industrial Logistics, Universiti Kuala Lumpur, Malaysian Institute of Industrial Technology (UniKL MITEC), 81750, Masai, Johor, Malaysia. E-mail: noorirdiana@unikl.edu.my