

THE ROLE OF CULTURAL DIMENSIONS IN THE ACCEPTANCE OF RETAIL INNOVATIONS

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Abstract:

The purpose of this paper is to study factors that influence acceptance of self-service retail innovations and to propose methods to measure these factors across cultures. In particular, the research studies how cultural dimensions influence the acceptance of technology used to deliver new ways of shopping. The cultural dimensions include uncertainty avoidance and collectivistic cultural dimensions as moderating factors to predict technology acceptance. Understanding these dimensions is important in the globalized economy where international retail firms are planning to increase market share in different countries. Understanding potential adaptation of new technology based service models is crucial for successful market entry. Given a means to predict acceptance of new service models, international retail firms are better prepared to adjust technology strategies to fit specific cultural needs. Furthermore, it is important to understand if the technology is perceived as an uncertainty or if it has been incorporated into normal living. The research case shows how a collectivistic culture and high uncertainty avoidance among young Taiwanese influences their acceptance of self-scan checkouts. An ANOVA analysis is used for testing the difference between variables. With a p-value of $<.0001$, it is concluded that there is significant difference between the three tested variables. Social pressure with a mean of 3.68 on a five point scale shows that has a significant influence on Taiwanese. Social pressure is influenced by collectivistic culture and negatively related to acceptance of self-scan checkout. Future research will extend the model to test the acceptance across cultures and retail innovation types.

Keywords: self-scan checkouts, cultural dimensions, retail innovation, service acceptance, retail service models

1. INTRODUCTION

Taiwan consumers represent a typical East Asian culture with a developed economy characterized by collectivism and high uncertainty avoidance (<http://geert-hofstede.com/taiwan.html>, accessed 02.01.2013). As such, Taiwanese consumers tend to follow the group and group's decisions. For the case of adopting new products and service technology, current research shows that if the group approves the product or service, then individual consumers will follow the group and acceptance quickly becomes ubiquitous. Individuals tend to follow group decisions rather than individual preferences. This type of behaviour defines a collectivistic culture and as a result Taiwanese shoppers should experience a high level of social pressure. Thus, group opinions will most likely influence the adoption of new retail innovations such as self-scan checkouts. Another important characteristic of Taiwanese culture is the high level of uncertainty avoidance which results in a high level of technology anxiety and a low level of self-efficacy. This cultural trait is expected to create behavioural tendencies where Taiwanese will have lower levels of self-scan checkout acceptance due to their uncertainty avoidance. However, since Taiwan has a high level of technology development, consumers are widely familiar with technology and use many different types of innovations in everyday life. The purpose of this research is to predict how a collectivistic culture and uncertainty avoidance will influence the adoption of retail innovations across Taiwan. The study begins with an analysis of the acceptance self-scan checkout in a supermarket rather than the use of a retail clerk to scan grocery purchases. The initial model will help to define the influence of cultural dimensions in preparation for a larger scale cross-cultural study of retail service innovation.

2. LITERATURE REVIEW

In the following sections, the current research related to the acceptance of self-service technologies (SST) is reviewed. First, SSTs are defined with reference to effective implementations used by global retailers. The review of cultural dimensions related to adaptation factors for SSTs provides a basis for data collection, modelling, and prediction.

2.1. Self – service technologies (SSTs)

Retail self service technologies are characterized by the use of information and communications technologies to replace the labor of service clerks. The customers themselves are playing the role of service employees with the assistance of new information systems and electronic retail service applications. The business processes are changing from one where the retailer serves all customers to one where the customers serve themselves. SSTs are technological interfaces that allow customers to perform the entire service on their own, without direct assistance from service employees (Meuter, Ostrom, Roundtree, & Bitner, 2000). SSTs are used in various industries. A large number of research papers have analyzed the efficacy of SSTs in banking and tourist industries. These SSTs are classified into different types. For example, SSTs include automated teller machines (ATMs), automated hotel checkout, banking by telephone, and services over the Internet, such as Federal Express packaging tracking and online brokerage services (Meuter et al., 2000). Retailing as a labor intensive business has a huge potential for SSTs. One of the SSTs that is widely implemented in retail stores is the self-scan checkout which is used to replace the checkout clerk. These checkout stations have customers scan the barcodes of their products, pay for the products and put them into bags on their own, without help of service employees (Schlieve & Pezoldt, 2010). This important retailing technology decreases the number of employees and thus the costs of operations.

Technological innovations in retailing also yield strong consumer advantages (e.g. speed, accuracy, economy) over retailing services not based on SSTs (Zeithaml & Gilly, 1987). Self-scan checkouts for consumers also reduces checkout times because stores can operate two to six self-scan checkout units per store where traditional stores only utilize a single checkout clerk (Schlieve & Pezoldt, 2010).

2.2. Self – service technology adoption factors

There is no general framework or concept used to analyze the acceptance SSTs by consumers. According to a review of SSTs literature published over a ten year period, there are over 60 publications related to SSTs acceptance. The review shows that there are 29 different self-service factors that influence the adoption of SSTs (Kelly, Lawlor, & Mulvey, 2010). Personal characteristics

have been identified as important psychological determinants of technology acceptance. These characteristics include constructs like social pressure, self-efficacy and technology anxiety (Eastin, 2002; Meuter et al., 2003; Meuter et al., 2005; Nysveen et al., Schlieve & Pezoldt, 2010). Social pressure or subjective norms are defined as the degree to which an individual believes that people who are important to themselves influence their actions to do something (Fishbein & Ajzen, 1975). In the case of this research, it is the degree where others in groups influence the individual to use self-scan checkouts. The perceived self-efficacy relates people's beliefs to their capabilities to produce given activities (Bandura, 1977). There is a positive relationship between self-efficacy and technology acceptance and therefore customers with higher self-efficacy are expected to have more confidence in their ability to use self-scan checkouts (Schlieve & Pezoldt, 2010). Technology anxiety is related to the level of anxiety of an individual, or level of comfort with decision to use a new technology (Igbaria & Parasuraman, 1989).

2.3. Cultural Dimensions

Zhang, Beatty, and Walsh (2008) reviewed twenty service research journals and discovered forty articles that focus on cross-cultural customer service research. The most popular categorization of cultural dimensions is the framework proposed by Hofstede (1980) which includes individualism versus collectivism, masculinity versus femininity, high power of distance versus low power of distance, and high uncertainty avoidance versus low uncertainty avoidance. Prior studies show that individualism and uncertainty avoidance are important to consumer acceptance of innovations in different cultures (Lim, Leung, Sia, & Lee, 2004). Individualism defines cultures where there are loose ties between individuals and there is a greater propensity for people to take care of themselves and their close family with low levels of concern for the rest of society. Collectivism defines cultures where people are integrated into cohesive groups and have strong loyalties to the group. People in individualistic cultures are encouraged to make their own choices whereas people in collective cultures are more willing to conform to the norms of the group (Erumban, & Jong, 2006). Members of individualist cultures feel free to express their own views and act accordingly and are therefore more willing to innovate and adopt new ideas (Erumban, & Jong, 2006). Further, an individualistic culture, where people tend to follow their own motives are more innovative than people from collectivistic cultures and are more likely to accept self-service checkout implementations.

Uncertainty avoidance varies across countries and is measured using a scale defining low or high uncertainty avoidance. The main characteristic of uncertainty avoidance is the orientation of society members toward the new and the unknown. According to Hofstede (1980), uncertainty avoidance is related to the degree by which members of a society feel uncomfortable with uncertainty and ambiguity. Therefore, people from cultures with low levels of uncertainty avoidance are more tolerant toward risk and are more willing to try new things. According to Yenyurt and Townsend (2003) uncertainty avoidance has a negative effect on the acceptance rates of new products. Therefore uncertainty avoidance is related to consumer willingness to adopt new technologies such as self-service technologies in retailing.

Cultural dimensions of Taiwan

Taiwan, with a score of 17 on the individualistic dimension, is considered as a collectivistic society (<http://geert-hofstede.com/taiwan.html>, accessed 02.01.2013). Thus, it is expected that Taiwanese will have a lower level of self-scan checkout acceptance. Taiwan's score for uncertainty avoidance is 69 and consumers are considered to have a high preference for avoiding uncertainty (<http://geert-hofstede.com/taiwan.html>, access 02.01.2013). High levels of uncertainty avoidance may predict that Taiwanese will have a low level of self-scan checkout acceptance. Individualism and uncertainty avoidance are congruent with the attitude toward the acceptance of self-scan checkouts. The SST adoption factors include social pressure, self-efficacy and technology anxiety which are related to cultural characteristics. It is expected that lower the degree of individualism, the higher the degree of social pressure. Social pressure is related to collectivistic cultures where individuals belong to a group and follow group decisions and values. Self-efficacy and technology anxiety are related to uncertainty avoidance and increases in the degree of uncertainty avoidance will increase technology anxiety.

3. RESEARCH METHOD

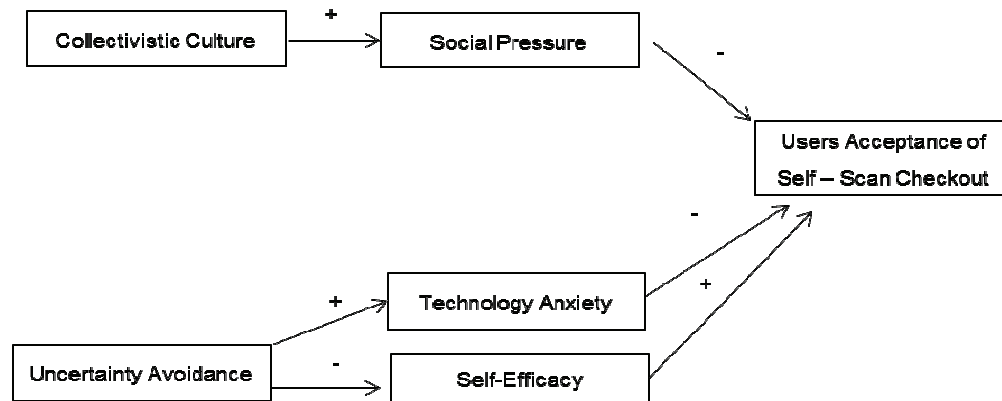
Primary data is collected using a paper survey distributed to a convenience sample of 150 university students in Taiwan (Hsinchu City). Students were asked questions about their attitudes toward self-

scan checkout. The survey was based on and adapted from a cross cultural survey designed by Schlieve & Pezoldt (2010). The survey consists of three sections including an introduction and picture used to define self-scan checkout, three series of questions used to test the primary hypotheses, and questions used to collect demographic information. The questions used to test the primary hypothesis are separated into three series. The first part includes five questions and tests social pressure, or the importance of the opinion of relevant persons to individuals considering the use of self-scan checkouts. The second part consists of six questions and measures the self-efficacy or the level of confidence of respondents to use self-scan technology. The last part consists of eight questions to test respondents' technology anxiety and their attitude toward technology usage. Respondents were asked to answer the questionnaire as a means to test the primary hypotheses. The questionnaire measured responses using a five-point scale ranging from "strongly agree" to "strongly disagree". The research questions used to collect data are shown in Table 1. The relationship between the hypotheses and the constructs of interest are depicted in Figure 1.

Table 1: Primary hypothesis and research question used for testing hypotheses

<p><i>H₁: Given a collectivistic culture, consumers will experience high levels of social pressure which negatively effects self-scan checkout acceptance</i></p> <p>Q1: The people who are important to me would think I should use self-scan checkouts Q2: It is expected that people like me would use self-scan checkouts Q3: People I look up to would expect me to use self-scan checkouts Q4: Most people who are important to me would approve of using self-scan checkouts Q5: The people who are important to me would agree that using self-scan is a good thing</p>
<p><i>H₂: Given a high level of uncertainty avoidance, consumers will have a low level of self-efficacy which negatively effects self-scan checkout acceptance.</i></p> <p>Q1: I could use self-scan checkouts without the help of others Q2: I could use self-scan checkouts if I had never used them before Q3: I could use self-scan checkout if I could call someone for help if I got stuck Q4: I could use self-scan checkouts if no one showed me how to do it first Q5: I could use self-scan checkout on my own Q6: I could use self-scan checkout if I had seen someone else using them before</p>
<p><i>H₃: Given a high level of uncertainty avoidance, consumers will have a high level of technology anxiety which negatively effects self-scan checkout acceptance</i></p> <p>Q1: I am unconfident that I can learn technology-related skills Q2: I have difficulty understanding most technological matters Q3: I feel apprehensive about using technology Q4: Technological terminology sounds like confusing jargon to me Q5: I hesitate to use technology for fear of making mistakes I cannot correct Q6: I have avoided technology because it is unfamiliar to me Q7: I am not able to keep up with important technological advances Q8: When given the opportunity to use technology, I fear I might damage it in some way</p>

Figure 1: Relationship among tested variables



4. DATA ANALYSIS

The means of three variables are tested to verify whether the primary hypotheses are supported. Social pressure scored a mean (μ_1) of 3.68 on five point scale. The self-efficacy mean (μ_2) is 4.5. The technology anxiety mean (μ_3) is 1.8. The self-efficacy mean is higher than the social pressure mean and is higher than the technology anxiety mean. An ANOVA analysis is used for testing the difference between variables. With a p-value of $<.0001$, it is concluded that there is significant difference between the three tested variables. The comparison of the mean score among the three categories shows that μ_1 is significantly lower than μ_2 . Then, μ_2 is significantly higher than μ_3 and μ_1 is significantly higher than μ_3 . Social pressure with a mean of 3.68 on the five point scale shows that social pressure has a high influence on Taiwanese students in accepting self-scan retail technology. Social pressure is a factor that is influenced by collectivistic culture and negatively related to acceptance of self-scan checkout as shown in Figure 1 above. It can be concluded that H_1 of this research is accepted. Self-efficacy has the statistically highest mean. This indicates that Taiwanese students have a high level of self-efficacy in relation to self-scan checkouts. The technology anxiety mean of 1.8 is the lowest of the three tested variables indicating that Taiwanese students have a low level of technology anxiety. Thus, H_2 and H_3 of this research are not supported by the data. Even though Taiwanese culture is high in uncertainty avoidance, self-scan technology is not perceived as an uncertainty. Technology has been incorporated into normal living and service processes and is opposite to the relations depicted in Figure 1. Uncertainty avoidance is not negatively related to the acceptance of self-scan checkouts in relation to self-efficacy and technology anxiety.

5. CONCLUDING THOUGHTS

Students are selected as target respondents due to their importance as retail customers. They are relevant customers and future society leaders that within four to ten years will be a major target of supermarket retailers. Future SSTs strategies for retailers are important to understand and adapt to the preferences of future target customers. According to the results of this research Taiwanese students have a statistically high level of self-efficacy and a low level of technology anxiety; therefore there is no technology acceptance barrier among the young Taiwanese population. They do not consider technology as an uncertainty and as a future target segment they are likely to adopt this type of self-service retail innovation. The aspect which retailers should take in consideration is the collectivistic culture of Taiwanese. The data show that Taiwanese students have high level of social pressure; therefore retailers should build a positive social opinion about the benefits of self-scan cashiers and convince users (perhaps through advertisements or incentive programs) to try the innovation. Future research will analyze additional factors related to collectivistic culture and self-service innovations including the need for interaction. The data show that self-efficacy of Taiwanese toward the usage of self-scan checkouts is significantly greater than the impact of social pressure. Therefore, it is expected that a positive attitude toward technology will overcome the social pressure

and Taiwanese will likely welcome the implementation in stores. Future research will compare these results across cultures and expand the scale to include different retail technology innovations (including retail kiosks, in-store package delivery, banking services, ticket purchase, dry cleaning services, and bill payment).

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