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GJMBR - E Classification : *JEL Code : M31, P36*



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The Relationship between Consumer Characteristics (Demographic Characteristics and Personality Traits) and SST Adoption in Multiple Service Industries in Saudi Arabia

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Abstract- This study examines the relationship between consumer characteristics (demographic characteristics and personality traits) and SST adoption in Multiple Service Industries in Saudi Arabia. With regards to the appropriate population sample, it should be 384 (Sekaran, 2003), and as such, the sample comprised of 400 individuals where data was obtained by self-administered questionnaire. This study addressed some assumptions of analysis including normality and multicollinearity. Furthermore, this study used multiple regressions analysis in order to test the relationship between independent variables and dependent variable. This study found a positive and significant association between demographic characteristics and SST adoption and a positive significant effect of personality traits on SST adoption. Eventually, this study offered some limitations and suggestions for future studies towards the end.

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I. INTRODUCTION

The service sector is one of the important contributors to the global economy. More specifically, in North America, the exports of commercial services in 2008 alone, increased by 9% to USD\$603 billion while the imports increased by 6% to USD\$473 billion. Europe's exports of commercial services on the other hand also showed an increase by 11% to USD\$1.9 trillion along with exports by 10% to USD\$1.6 trillion. In the meantime, commercial services exports in the context of the Middle Eastern countries was reported at USD\$94 billion in 2008, showing an increase of 17% from the year before. Along a similar line, imports also increased by 13% in the same context to USD\$158 billion (WTO, 2008). While the economic growth of both the continents of Europe and North America only displayed a slight 1% increase in 2008, the

oil exporting regions of South and Central America, the Commonwealth of Independent States, Africa and the Middle East all reported increase in their GDP growth of 5% with Middle East exports growing at the rate of 6.3%.

Within the services sector, the current convergence of information and communication technology (ICT) is generating novel opportunities including redeployment of people, reconfiguration of organizations, sharing information and investing in technologies. The investments are expected to produce technical solutions that accommodate the dynamic business environment and effectively make use of the knowledge value in service relationships to generate superior business value (Arsanjani, 2004). These activities that are catered to generating services are arising at many levels of the organization and it makes use of technology to meet the increasing requirement for higher business integration, agility and versatility.

One of the most widely used technologies by firms in response to the service-oriented thinking activities is self-service technologies (SST). They are technological interfaces that allow customers to make use of service that is independent from direct employee involvement (Bitner, Brown, and Meuter, 2000). This kind of interface is known as person to technology service delivery (Dabholkar, 1994). Initially, in the early era of self-service technology, automated teller machines (ATM) are implemented by banks and other financial intermediaries to disperse money and carry out other services such as balance checking and account transfer. The financial services delivery and consumption has however experienced major changes. Development in technology has restructured the environment of businesses.

Self-service technologies have increasingly become important in the service environment over the past decade. In fact, technology-based interactions are expected to become a crucial element for long-term success in service delivery in the service industry like retailing and hospitality (Meuter et. al., 2000) in the future. As such, no wonder tourism and technology are two of the largest and fastest growing industries in the world (Sheldon, 1997). Moreover, self-service

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technology is expected to become increasingly more important as service providers throughout the world continue to exert efforts and find ways to lower costs while increasing service to maintain their competitiveness in the market.

In the last few decades, corporations have significantly increased their investment in information technology (Ndubisi, 2005). With the aim of satisfying diverse consumer needs and gaining competitive advantages in the market, retail banks for instance have invested millions in new technologies. Global Information Technology (IT) spending by financial institutions reached USD\$351.2 billion in 2008 with an annual growth rate of 5.1%.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

a) *Demographic Characteristics and SST Adoption*

Demographic characteristics have long been a focus of innovation adoption literature, and are primary predictors of adoption whereby they influence the consumer's attitude and behaviour intention in adopting the SST (Rogers, 1995; Burke, 2002). A thorough literature review of studies dedicated to consumers use of SSTs shows a basic focus on differences among individuals (Parasuraman & Colby, 2001) and differences among attitude models when it comes to predicting intended behaviours (Curran, Meuter and Surprenant, 2003; Dabholkar & Bagozzi, 2002). The effect of SST usage drivers is not equal throughout various demographic groups (Chiu, Lin & Tang 2005). The importance of the demographics groups in technology adoption has been recognized in a variety of studies (Morris & Venkatesh 2000; Venkatesh and Morris 2000; Venkatesh *et al.* 2003).

The top four major relevant variables known to affect technology adoption are age, gender, education and income (Burke, 2002). Individuals who tend to adopt new technologies are younger, male, highly educated, and have higher income than their non-adopting counterparts (Labay & Kinnear, 1981; Danko & MacLachlan, 1983; Dickerson & Gentry, 1983; Darian, 1987; Zeithaml & Gilly, 1987; Gatignon & Robertson, 1991; Greco & Fields, 1991; Rogers, 1995; Sim & Koi, 2002; Venkatraman, 1991).

Morris and Venkatesh (2000) claimed that the association between attitude and intention is not the same for every individual. The intention to use the technology is stronger among younger people than the older ones. Currently, many studies found that gender has some influence in the use of technology where both genders utilize different information-processing methods (Meyers-Levy & Maheswaran, 1991). Females usually demonstrate greater involvement and high information process while shopping compared to their male counterparts (Laroche *et al.*, 2000; Laroche *et al.*, 2003).

This can be explained through the different priorities that both genders harbour in that males try to keep time and effort investment minimized, while females are desirous of minimizing the distraction from the shopping experience.

In using the self-service technology, this signifies that males place more significance in making efficient shopping with the help of SST, but females avoid complicating their shopping task performance by having to make use of SST. According to Venkatesh and Morris (2000), in comparison to females, males' use of technology is strongly influenced by their perceptions of its usefulness while the female is more strongly influenced by their perceptions of the technology's ease of use (p. 115).

Moreover, Durrande-Moreau and Usunier (1999) contended that individuals who possess high qualified jobs have a greater tendency to show a more quantitative time orientation as implied by the statement, 'time is money'. SST is higher among more highly educated individuals compared to their low-educated counterparts. Also, Rogers (2003) reached to the conclusion that early adopters tend to have more years of formal education compared to later adopters. It is obvious that the defining feature of innovations is their newness and this attribute has some use for customers (Blythe, 1999) and this is particularly the case for highly educated groups as they are more inclined to adopt new technologies (Im, Bayus, & Mason, 2003).

The effect of education on user attitude toward technology is discussed in literature as having an impact on the attitude and intention of an individual towards workplace technologies (Morris and Venkatesh, 2000; Venkatesh & Morris, 2000; Evanschitzky & Wunderlich, 2006). Individuals having higher levels of education tend to gather and process more extensive information as well as employ more information before they decide. On the other hand, less educated people however do not perform similarly and rely more on fewer information cues (Morris and Venkatesh, 2000; Venkatesh and Morris, 2000; Evanschitzky and Wunderlich, 2006; Capon & Burke, 1980).

In addition, higher education may result in confidence and the perception that SST is more understandable and invaluable (Breakwell, 1986; Gist, 1987; Igbaria & Parasuraman, 1989). Household income also play some role in the adoption of the SST, greater household incomes are more inclined to use the technology in comparison to their low-income counterparts. This is because the high household income is positively associated with the possession of current technology including computers, Internet access and higher education levels of consumers and thus using the self-service technology is something common to them (Lohse *et al.*, 2000).

Higher income may lead to higher chances of access to the needed tools and the motivation for SST use (Breakwell, 1986; Gist, 1987; Igbaria&Parasuraman, 1989). This discussion has led this study to confirm the significant of demographic factors in the seek values that consumer look for in using the SST. Hence, hypothesis 1a is proposed;

H1: There is a relationship between Demographic factors and SST Adoption.

b) Personality Traits and SST Adoption

Personality traits have been widely discussed in the consumer behaviour literature as an influencing factor in the use of self-service technology (Dabholkar&Bagozzi, 2002; O'Cass&Fenech, 2002; Childers *et al.*, 2001). Personality traits are believed to have effects on consumer's intention and thus it is significant in the seek values of the consumers. Three important personality traits that are commonly assessed in the consumer intention and adoption are; self-efficacy as highlighted by Eastin and LaRose (2000), Marakaset *al.* (1998) and Bandura, (1994), inertia as mentioned by Dabholkar and Bagozzi (2002) and Meuteret *al.* (2005) and interaction need (Dabholkar and Bagozzi, 2002; Dabholkar, 1996).

Self-efficacy is the individual's beliefs that he/she is capable and has the resources to perform a particular task successfully (Bandura, 1994). It is the level to which the customer perceives that using the self-service technology is easy or difficult. General computer self-efficacy is defined by Marakaset *al.* (1998) as an individual's judgment of efficacy throughout multiple computer application domains, while internet self-efficacy is an individual's judgment of his/her ability to employ Internet skills in a more extensive method, like searching for information or troubleshooting search issues (Eastin&LaRose, 2000). Hence, individuals with low self-efficacy are not certain and are uncomfortable using technology and require simple procedures to guide them to using the technology. Low self-efficacy consumers would unlikely seek the values for the technology adoption as they are not comfortable with the technology whilst high self-efficacy consumers would likely seek the values for the technology adoption as they are comfortable with the technology used. Judgments of self-efficacy are positively linked to outcome expectations (Oliver & Shapiro, 1993). In other words, the higher the person's self-efficacy is, the more likely that person will try to meet the expected result. This is because consumers have higher tendency to try and persist in behaviours that they feel that they are capable of performing (Eastin&LaRose, 2000).

Inertia refers to the level to which people refuse to change their customs/habits. Inertia may limit efforts to learn about SST. Utilizing new SST calls for investing in time and energy and this minimizes motivation (Gremler, 1995). Inertia also hinders behavioural

changes and results in the hesitancy in trying new service delivery options (Aaker, 1991; Gremler, 1995).

The other personality characteristic related to the user seeks value and consumer behaviour intention of technology adoption is the need for interaction with the employee of the service provider (Dabholkar&Bagozzi, 2002). This interaction need refers to the significance of human interaction to the consumer during the provision of service (Dabholkar, 1996). In the context of self-service technology, human interaction with an employee of the service provider is replaced by help-buttons and search features of the technology.

Hence, consumers having high need for interaction will steer clear of using the technology while consumers with a low need for interaction will be more amiable towards the option (Dabholkar&Bagozzi, 2002). This high need for interaction may result in minimized interest in how SST works and the motivation to have a go at it (Dabholkar, 1996; Langeardet *al.*, 1981). In other words, a high level of need of personal interaction minimizes the motivation towards using SST (Bateson, 1985; Langeardet *al.*, 1981; Meuteret *al.*, 2000).

This indicates that the characteristic of the consumer's 'need for interaction' has a significant impact on the association between consumer behaviour intention and the self-service technology adoption. Because of the lack of physical contract with employees and sales persons in self-service technology adoption environment, the relationships should be stronger for consumers with a high degree of interaction to perceive positive value in self-service technology adoption. The above discussion leads this study to confirm that personality traits influence the user seek values. Hence, hypothesis 2 is proposed as follows:

H2: There is a relationship between Personality Traits and SST Adoption.

III. RESEARCH METHOD AND THE STUDY MODELS

The population for this study comprise of people who live in Saudi Arabia and who use the self-service technology in various industries in the country. There is no single authoritative sampling frame that is accessible in the country, thus sampling frame is not drawn based on the population of the people or consumers in the country.

In this study sample respondents' selection is based on Sekaran (2003) who stated that if the population of the study exceeds a million, a recommended sample of 384 respondents would be enough to generate findings that could be generated to larger groups. Thus, this study planned to include 384 respondents for the study sample.

Sampling is the process of selecting units such as people or organizations from a population, and by studying the sample it enables the researchers to fairly

generalize the results to the population. In addition, a sample is the group of people who are selected to be in the study. Thus sampling is the utilization of a subset of the population to reflect the whole population. The methods of selecting the groups of people can be done by using several sampling procedures. As far as research methodology is concerned, there are two major sampling methods that are commonly used in research; non-probability and probability sampling. The most appropriate sampling method is needed to ensure that the sample truly represent the whole population and thus can be generalized to other places and at other times. Non-probability sampling is a sampling technique where not everyone has a chance to be selected as a sample; some people have a greater chance while others do not. In contrast, probability sampling is a

technique where every person has an equal chance to be selected as a sample at random. This study will use a non-probability technique due to unfeasible and impractical situations to select samples randomly in Saudi Arabia.

The main technique for gathering the data is through a survey in which the instrument, a questionnaire is distributed to the respondents. Survey research is among the most important areas of measurement in social research. The general area of survey research covers any measurement procedures involving asking respondents questions. A survey is described as ranging from a short paper-and-pencil feedback form to an intensive one-to-one extensive interview.

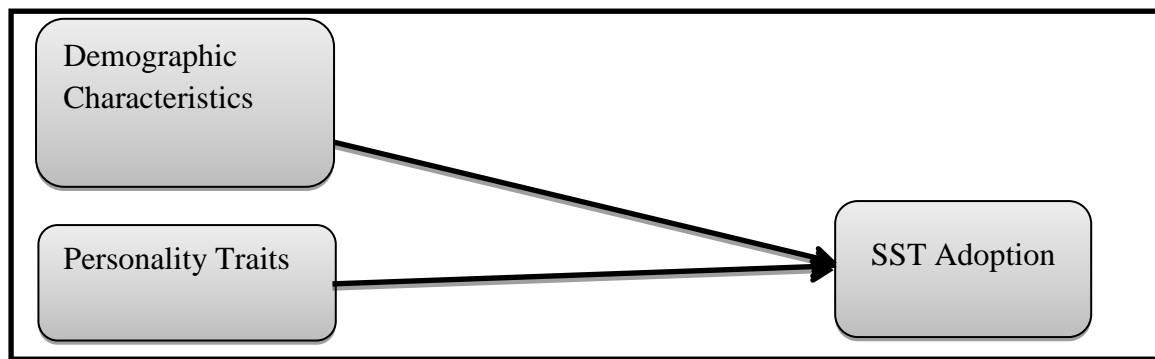


Figure 1: Research Framework

a) *Measurements of Instruments*

Consumer characteristics can be measured through two main dimensions; demographic profiles which represent the user, and personal traits. Demographic profiles include the four main factors of age, gender, income and education (Burke, 2002). In this context, personal traits encompass expertise (Ratchfordet *al.*, 2001; Alba & Hutchinson, 1987). Finally, Adoption of SST – process of adoption is adapted from Rogers (1995) that include trial, evaluation, awareness, investigation, repeated use and commitment. However, this study only summarized them into five stages instead of six which include non-adopter (awareness and investigation, considering (evaluation), using (trial),

using frequently (repeated use), and using regularly (commitment).

IV. DATA ANALYSIS AND RESULTS

The data gathered is analysed through IBM SPSS to provide a description of the data and to test the relationship proposed in the hypotheses.

a) *Descriptive Statistic*

The continuous variables descriptive statistics results are presented in Table 1. They cover values of mean, standard deviation, minimum and maximum obtained through SPSS version 21.

Table 1: Descriptive Statistics of Continuous Variables

Variables	Mean	Std. Deviation	Min	Max
DC	2.515	.6348	1.00	5.00
PT	3.306	.6704	1.00	5.00
SSTADOT	3.808	.623	1.25	5.00

b) *Testing the Assumption of Normality*

Normality testing is utilized to confirm the symmetrical curve with the highest frequency of scores towards small and middle frequencies in the extreme (Pallant, 2011). Accordingly, Kline (1998) and Pallant (2011) recommended that the normal distribution assessment for both independent and dependent variables can be examined through their values of skewness and kurtosis. In the field of social sciences, the constructs nature is characterized by several scales and measures that may lead to positive or negative skewness (Pallant, 2011). On the other hand, kurtosis values measures the distribution that displays the level to which observations are collected around the central

mean. Skewness values that fall outside the range of +1 to -1 are considered as skewed (Hair et al., 2010). Another take on the distribution comes from Kline (1998) who suggested the range from +3 to -3 as acceptable. On the basis of Kline's (1998) suggestion, the values of skewness in this study are acceptable but not on the basis of Hair et al.'s (2006) suggestion. In addition, the kurtosis values (+3 to -3) were met in this study as presented in Table 5.5.

However, some of the skewness values are deviated from normal distribution and hence, the study made use of SPSS to address such skewness (Chin, 1998).

Table 2: Results of Skweness and Kurtosis for Normality Test

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
DC	0.415	0.122	1.324	0.243
PT	-0.415	0.122	-0.087	0.243
SSTADOT	-0.725	0.122	0.889	0.243

c) *Correlation Analysis*

According to Hair et al. (2010) in order in identifying the strength of the relationship between dependent and independent variables, no correlation exists if the correlation value is equal to 0, and when the correlation value is equal to ± 1.0 , a perfect correlation is deemed to exist. They further explained that values that fall in the range from ± 0.1 to ± 0.29 are deemed to have small correlation, whereas those falling between

correlation value (r) of ± 0.30 and ± 0.49 indicate a medium correlation. Added to the above, when the correlation value exceeds ± 0.50 , then the correlation relationship is said to be strong.

The results of the correlation analysis are depicted in Table 3 and according to the findings, the correlations are all less than 0.80 indicating that Gujarati and Porter's (2009) criterion is met for the absence of multicollinearity.

Table 3: Results of Pearson Correlation Analysis

	1	2	3
1) DC			
2) PT	-0.258***		
3) SSTADOT	0.069	0.255***	

Notes: ***Correlation is significant at the 0.01 level (2- tailed).

**Correlation is significant at the 0.05 level (2- tailed).

*Correlation is significant at the 0.1 level (2- tailed).

d) *Multicollinearity Test*

Table 4: Multicollinearity Test

Variables	Tolerance Value	VIF
DC	.933	1.071
PT	.933	1.071

e) *Regression Results of Model (Based on SST Adoption)*

Table 5: Regression Results of Model (Dependent= SST Adoption)

Variables	Standardized Coefficients Beta	t-value	Sig.
DC	0.144	2.907	0.004
PT	0.292	5.882	0.000
R ²			0.085
Adjusted R ²			0.080
F-value			18.333
F-Significant			0.000

The regression analysis results of SST adoption are presented in Table 5, where the value of the model's R² is 0.085, which shows that the model accounts for 9% of the SST adoption variance (a respectable result). Moreover, the adjusted coefficient of determination (R²) shows that 0.08% of the dependent variable's variation is accounted for by the independent variables evidencing the fact that the SST adoption variation was statistically explained by the regression equation. Table 5 also shows the significant F value of the model at (F=18.333, p<0.01) signifying model validity.

V. DISCUSSION OF RESULTS

a) *Demographic Characteristics and SST Adoption*

The finding as presented in Table 5 revealed that there is a positive and significant relationship between demographic characteristics and SST adoption so H1 is supported. Meaning that, SST adoption will increase with higher demographic characteristics.

b) *Personality Traits and SST Adoption*

This study, as mentioned earlier, hypothesized that there is a positive relationship between personality traits and SST adoption. Table 5 reveals the result regarding this relationship and according to it, personality traits have a positive and significant association with SST adoption.

VI. CONCLUSION

This study was an attempt to investigate the relationship between consumer characteristics (demographic characteristics and personality traits) and SST adoption in multiple service Industries in Saudi Arabia. This study used SPSS to run the relationship between independent variables and dependent variable. Moreover, the sample was comprised of 400 sampling where data was obtained by questionnaire. The outcome of this study found a positive and significant association between demographic characteristics and SST adoption. In the same path, this study also revealed

that there is a positive significant relationship between personality traits and SST adoption.

VII. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study has some limitations and suggestions for future studies. Firstly, this study's main objective is to examine the relationship between consumer characteristics (demographic characteristics and personality traits) and SST adoption in Saudi Arabia directly so this study recommended future researchers to take into account this relationship in other countries in the same level such as in GCC countries like Oman, Qatar among others. Secondly, this study advises future researchers to investigate this relationship through other variables like culture. Finally, this study recommends future researcher to make comparison between two countries in the GCC countries in order to determine the differences between them.

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