Utilization of Self-Service Banking Technologies: A Study of the Variables Differentiating the Level of Usage among the Mature Age Consumer Market in Australia

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Abstract

The literature indicates that consumers more likely to trial and adopt Self Service Technologies (SSTs) are younger, more affluent, and better educated. In Australia mature age consumers over the age of 50, the adoption and use of SSTs in the financial services sector has been considerably lower when compared to those below the age of 50. The purpose of this paper is to determine the main variables that discriminate between non-users and low users of SSBTs among the mature age consumers

Introduction

Customers increasingly are being required by firms to take a more active role in the production and delivery of services through the use of self-service technologies (SSTs). It is argued that the effective infusion of these technologies into the 'marketspace' (Rayport & Sviokla 1995, p. 525) provide users with many benefits including convenience, flexibility, customisation, control, enjoyment, improved service over face-to-face encounters and greater satisfaction (Dabholkar 1996; Bitner, Brown & Meuter 2000; Meuter et al. 2000). However, some consumers have negative experiences and feelings towards SSTs (Mick & Fournier 1998; Parasuraman 2000) due to technology failure during and post technology interaction and their own inabilities to perform the task (Meuter et al. 2000). Further, some customers prefer personal interaction with service personnel and other customers and are less than eager or could even resist using SSTs (Lee & Allaway 2002).

Prior research findings indicate that consumers more likely to trial and adopt SSTs are younger, more affluent, and better educated (Lee, Lee & Eastwood 2003; Meuter et al. 2005), however it cannot be assumed that it is the 'senior' market segment that represents the last bastion of resistance towards SSTs (Barnes, Dunne & Glynn 2000). Mature consumers are more heterogeneous than younger consumer groups (Carrigan 1998; Moschis 2003) and their differences in behaviour and use of technologies is influenced by factors like innovativeness, cognitive age, physiological, social and psychological ageing factors, and attitude towards technologies (Szmigin & Carrigan 2000; Moschis 2003; Eastman & Iyer 2004; Mayhorn et al. 2004).

For mature age consumers over the age of 50, the adoption and use of SSTs in the financial services sector has been considerably lower when compared to those below the age of 50 (Australian Bankers' Association 2004). While the use of EFTPOS (Electronic Funds Transfer Point of Sale), ATMs and telephone banking among mature consumers has been slow to diffuse into this market segment, the take up rate of internet banking has been faster, however the usage rate is only about 30% of those mature consumers who have access to the internet (Australian Bankers' Association 2004; Australian Bureau of Statistics 2004-05).

With people living longer, many mature age consumers may find it more difficult in future years to attend to their financial affairs if they don't have the capability to deal with self-service banking technologies (SSBTs).

The scope of empirical research on mature consumers' behaviour and use of SSBTs has primarily been descriptive in nature (Gilly & Zeithaml 1985; Kwan 1991; Rogers, Gilbert & Cabrera 1997), with very few studies examining predictors of attitude and behaviour (Mattila, Karjaluoto & Pento 2003; Darch & Caltabiano 2004). To enable mature consumers to adapt to using SSBTs suited to their needs, further empirical research is required to identify the main factors inhibiting non-users from using SSBTs. Therefore the purpose of this paper was to determine the extent to which differences exist between non-users and low uses of SSBTs based on variables that capture the perceptions held by mature consumers towards these technologies.

Research findings of this nature can focus educational design and communication strategies to foster greater use of SSBTs particularly among non-users.

Conceptual Framework

Drawing on two main elements proposed by Gatignon and Robertson (1991) in the consumer diffusion paradigm, namely perceived innovation characteristics and personal characteristics, a range of variables within the context of these two elements were considered for this study. These variables are proposed as variables that may influence potential use of SSBTs and discriminate between non-users and low users of these technologies.

Perceived innovation characteristics Although all of the innovation characteristics are important in the product adoption literature (Ostlund 1974; Rogers 1983), a more parsimonious set that is salient to SST usage and the context of this study will be examined. In the information systems domain and more recently in the SST context, perceived usefulness, perceived ease of use, compatibility and perceived risk have been identified as influencing variables on usage behaviour of technologies (Davis, Bagozzi & Warshaw 1989; Dabholkar & Bagozzi 2002; Curran & Meuter 2005; Meuter et al. 2005). In the context of this study, it is proposed that low users will perceive SSBTs to be more useful, easier to use and compatible with current financial needs and experience and lower risk than for non-users, thus discriminate between the two groups.

Personal characteristics As the mature consumer market is more heterogeneous than its younger counterpart, and this diversity increases with age (Moschis 2003), the present study explores a set of five variables under this element namely personal contact, technology discomfort, self-efficacy, age and education. Based on findings from prior research it is proposed that low users have less desire for personal contact with a teller, are more at ease using SSBTs, consider they are more confident in their ability to use SSBTs, are younger mature consumers and have a slightly higher level of attained education (Venkatesh 2000; Dabholkar & Bagozzi 2002; Mattila, Karjaluoto & Pento 2003; Meuter et al. 2003; Wang et al. 2003; Darch & Caltabiano 2004) than non-users and thus these variables will discriminate between the two groups.

Self-Service Banking Technology Grouping Variable

The grouping variable for this study was based on a constant-sum scale using 100 points for respondents to allocate their level of use across the four SSBTs and face-to-face banking method. The allocated 100 points were then converted to a scale ranging from 0 to 10, with 0 representing face-to-face banking only and 0.1 to 10 representing varying levels and combinations of SSBT use. For the purpose of this study those respondents using only face-to-face banking formed the non-user group. The low user group was formed by splitting the 0.1 to 10 scale at 5. Those respondents using SSBTs between 5.1 and 10 (medium to high users) were omitted from further calculations and analysis. Based on this split, respondents belonging to the low user group indicated their level of use of one or more of the SSBTs ranged from 0.1 to 5, inferring that any member of this group could use SSBTs from as low as 0.1% to as high as 50% of their transactions with the remainder of their transactions being face-to-face. Based on this split two mature consumer groups were formed: non-users and low users. The discriminating variables discussed in the previous section were used to distinguish between the two mutually exclusive groups.

Methodology

The primary data for this study was collected from mature consumers (over 50 years of age) who were selected using a proportional stratified sampling method from a large Australian Seniors database. Based on the type of information that was required for the analysis, the wide dispersion of respondents across Australia, and confidentiality and privacy issues, a mail self-administered questionnaire was considered most appropriate. The questionnaire used in the survey was developed from items derived from the literature and modified to the context of this study, as well as further items generated from findings of a series of in-depth interviews and focus groups with representatives from the population of interest. Rigorous development and testing of the measurement scale for each variable followed the approach outlined by Netemeyer, Bearden and Sharma (2003). The variables were measured using between four to eight items per variable (43 items in total) on a five-point scale ranging from 1 'strongly disagree' to 5 'strongly agree'. Demographics including three age categories 50-59; 60-69; 70+ and six educational categories were collected.

A total of 6,000 surveys were sent to selected respondents and a total of 2,253 (38%) usable questionnaires were returned. Using the procedure mention above the data was grouped into non-users of SSBTs (n = 319, only use face-to-face banking), low users of SSBTs (n = 327; use SSBTs for 50% or less of their transactions) and medium-to-high users of SSBTs (n = 1,607, using SSBTs for greater than 50% of their transactions).

This study concentrates on examining the variables differentiating non-users from low users of SSBTs because the study is seeking to determine those variables that might be able to assist financial institutions in designing appropriate strategies that may encourage non-users to at least become low users of SSBTs. Some non-users may also progress to become medium-to-high users in the future. For the purpose of this study, data relating to 319 non-users and 327 low users is retained for further analysis in the following sections.

Respondent Profile

Respondents ranged in age from 50 to over 85 years of age. The non-user group were older with 62% of respondents in the 70+ age category compared to 33% for the low user group. Both groups had slightly more female than male respondents. Over 60% of respondents were married in both groups, with slightly more widowed respondents in the non-user group. The remaining statistics for both groups were similar with annual gross household income (before tax) varying from less than $9,000 to greater than $60,000, with approximately 30% of respondents in the $20,000 to $39,000 category. Respondents' highest education achieved ranged from primary/some secondary (approximately 20%) to degree/ postgraduate qualification (approximately 15%). Slightly more respondents in the non-user group were retired (66%) compared to low user group (55%). More than 45% of respondents were currently or previously employed in a professional or management position. Respondents who completed the questionnaire lived in regional and rural areas of Australia.

Use of individual SSBTs among low users varied with respondents reporting the following level of use: EFTPOS, 48%; ATM, 66%; telephone banking, 31%; and internet banking, 13%. Results indicate that 50% of low users actively use two or more SSBTs in combination with face-to-face banking. In the following section the results of the discriminant analysis is reported.

Results

In analyzing the data from this study, a linear stepwise discriminant analysis was used to identify if significant differences exist between non-users and low users of SSBTs. The set of variables pertaining to perceived innovation characteristics and personal characteristics outlined earlier in the paper were used for the discriminant analysis. The main aim of discriminant analysis, a multivariate statistical technique, in this study was to determine the differences between two groups with respect to a set of discriminant variables (Klecka 1980; Tabachnick & Fidell 2001). Results of the discriminant analysis are reported in Table 1.

Table 1: Summary of the significant variable items discriminating between non-user and low user groups

Variable items	Variable item description	Sig. level	Wilks lambda
Perceived usefulness 4	SSBTs provide convenient access to account funds when making a purchase	0.000	0.810
Self-efficacy 1	Confident in my ability to withdraw cash from ATM	0.000	0.736
Age	Age is scaled from younger to older	0.000	0.707
Compatibility 2	SSBTs are compatible with my current banking	0.000	0.682
Perceived ease of use	Easy to gain skills to use SSBTs	0.000	0.669
Self-efficacy 4	Confident in my ability to remember PIN using SSBT	0.000	0.652
Self-efficacy 5	Confident in my ability to access & use internet banking	0.000	0.645
Self-efficacy 6	Using EFTPOS is well within the scope of my ability	0.000	0.636
Personal contact 5	Personal contact allows me to check my	0.000	0.626
Personal contact 2	Personal interaction to transact provides greater reassurance	0.000	0.619
Compatibility 3	SSBTs are compatible with my previous technology experience	0.000	0.613
Technology discomfort	Using most SSBTs would be very stressful	0.000	0.609
Perceived usefulness 7	SSBTs provide lower cost withdrawal & transfer	0.000	0.606

Overall correctly classified 78% (non-users 78.3%; low users 77.8%)
Overall Wilks Lambda = 0.606 ($\chi 2_{(13)}$ = 298.47, p < 0.000)
Canonical correlation = 0.628

As shown in table 1, seven of the nine variables, each consisting of one or more items where found to discriminate between non-users and low users of SSBTs. The overall classification accuracy of the discriminant function was 78%. The Wilks Lambda (0.606) was significant at the 0.000 level, indicating that the two groups were significantly different in terms of the discriminant function. The discriminant function had a canonical correlation of 0.628.

The canonical correlation coefficient is a measure of association that indicates the degree of relatedness between the groups and the discriminant function. A coefficient of zero means no relationship at all whereas large, positive numbers represent increasing degrees of association with 1.0 being the maximum (Klecka 1980). Therefore, the canonical correlation of 0.628 for this study suggests a substantive relationship between mature consumers who are non-users of SSBTs and those who are low users of SSBTs and the discriminant function.

The performance of the discriminant analysis can further be assessed by the percentage of correct classification of cases. Overall 78% of cases were correctly classified to their respective group, with 78.3% of non-user cases correctly classified and 77.8% low user cases correctly classified. These results are above the expected 50% based on a two group discriminant analysis with a fairly even split in cases between non-user and low user groups (Hair et al. 1998).

The mean value of items discriminating between non-users and low users are presented in Table 2 and grouped by variable to show the magnitude and direction of the mean values. These results indicate that the mean value for each variable item is in the direction proposed, for example, low users perceive they have a higher level of self-efficacy than non-users. The results will be discussed in the next section and implications for the financial services sector outlined.

Table 2: Summary of the magnitude and direction of mean values for significant variable   items discriminating between non-user and low user groups

Variable items	Variable item description	Non-users *Mean*	Low users *Mean*
Self-efficacy 1	Confident in my ability to withdraw cash from	2.98	4.08
Self-efficacy 4	Confident in my ability to remember PIN using	2.97	4.01
Self-efficacy 5	Confident in my ability to access & use internet banking	2.14	2.41
Self-efficacy 6	Using EFTPOS is well within the scope of my	3.01	3.92
Perceived usefulness 4	SSBTs provide convenient access to account funds when making a purchase	1.99	3.16
Perceived usefulness 7	SSBTs provide lower cost withdrawal & transfer	2.10	2.92
Compatibility 2	SSBTs are compatible with my current banking	1.67	2.58
Compatibility 3	SSBTs are compatible with my previous technology experience	1.84	2.70
Perceived ease of use	Easy to gain skills to use SSBTs	2.84	3.31
Technology	Using most SSBTs would be very stressful	4.04	3.32
Personal contact 2	Personal interaction to transact provides greater reassurance	4.65	4.47
Personal contact 5	Personal contact allows me to check my	4.68	4.21
Age	Age is scaled from younger to older	2.45	1.96

All variable except age are measured on a five-point scale: 1 – strongly disagree; 5 strongly agree
  Age: 1 = 50-59; 2 = 60-69; 3 = 70 and above

Discussion and Implications

According to the results reported in Table 1 and 2, the 13 items that discriminate between non-users and low users of SSBTs can be grouped into seven variables. Three of these variables represent the perceived innovation characteristics element and the remaining four variables form part of the personal characteristics element.

The significance of each of these variables in discriminating between low and non-users of SSBTs will now be discussed in relation to this study.

1. Self-efficacy: Low users were found to hold stronger beliefs regarding their perceived capability and confidence to perform specific behaviors relating to the use of SSBTs than mature consumers in the non-user group. With many mature consumers' not feeling confident in their ability to use one or more SSBTs and thus relying solely on accessing financial service through face-to-face services, avenues need to be explored to improve mature consumers' self-efficacy.

2. Perceived usefulness: As the second variable, low users considered SSBTs in comparison to face-to-face services moderately more convenient, flexible and having lower associated costs than non-users. This result indicated that non-users perceive SSBTs to be a less convenient approach to accessing their accounts when making purchases. Perhaps non-users are not aware of the benefits one of more SSBTs could provide them in these circumstances.

3. Compatibility: Mature consumers' in the low user group perceive that SSBTs are moderately compatible with their current banking needs and previous technology experience, while non-users hold a lower perception. These findings suggest that for non-users to consider SSBTs that a degree of attitude and behaviour change would be required for trial to be considered.

4. Perceived ease of use: Non-users perceived that using SSBTs would require considerable effort and would be more difficult to understand and learn to use than low users. While low users have mastered the use of various SSBTs, mild negative perceptions relating to ease of use held by non-users need modifying.

5. Technology discomfort: The next variable refers to the tendency of consumers to feel uncomfortable or anxious towards the use of SSBTs. Non-users of SSBTs perceived they would experience a high level of discomfort, while low users still feel a moderate level of discomfort using these technologies. Infrequent use of SSBTs could contribute to this state.

6. Personal contact: Personal face-to-face service was considered highly important for mature consumers in the non-user group as it provided them with greater control, reassurance and access to personal feedback, while perception of mature consumers in the low user group were moderate to high. While low users have slowly embraced SSBTs, they still have a desire for a level of personal service, thus suggesting that it is possible for non-users to maintain personal contact and gain some flexibility of financial services through using a SSBT.

7. Age: In relation to this variable, low users could be referred to as 'young old" while non-users are more closely aligned with the 'old old' category. While non-users are significantly older, there are avenues to assist mature consumers in this group to trial and adopt at least one SSBT.

Conclusion

The findings of this study provide some insight into the factors that inhibit mature consumers from using SSBTs. A low level of confidence in their ability to use SSBTs appears as a reason for non-users not embracing these technologies. Further their experience with similar technologies to those used in self-service banking is also considerably low or not at all. These findings do not suggest that non-users do not have the ability, but rather they are lacking confidence in themselves to try a SSBT. A further factor inhibiting use among non-users is their limited understanding of the convenient access to funds that SSBTs could afford them in retail purchase and other situations. Non-users would not appear to be fully aware of the benefits that SSBTs could provide and thus could contribute to their productive ageing.

Furthermore, non-users perceive SSBTs as not being compatible with face-to-face banking rather then understanding that these technologies can complement their financial service needs. While using technologies such as ATMs and internet banking may not be suitable for older non-users, EFTPOS and telephone banking would be more aligned with their limited technology skills and provide a less stressful experience. As EFTPOS is regarded as a SSBT, use of this method occurs with the presence of a service provider and thus some assistance and reassurance can be given. Implications of these findings would suggest that financial institutions need to implement communication strategies and educational programs targeted at the mature consumer sector that (1) communication clear and concise benefits that use of SSBTs, such as EFTPOS would provide, (2) provide one-on-one training in the use of SSBTs, with opportunity for follow-up practice.

Finally, this study has been limited to investigating a selected set of variables. Further research should include variables such as cognitive age, innovativeness and habit. While training has been proposed, further research is required relating to how best to conduct this training given the physiological, perceptual, and cognitive changes of the mature consumer. Future study should also endeavour to identify factors that could discriminate mature consumers who are medium-to- high level users of SSBTs from the low level users.

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