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AN EMPIRICAL INVESTIGATION OF THE EFFECT OF CUSTOMER PARTICIPATION ON ATM'S SERVICE PERFORMANCE

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ABSTRACT

The banking industry was one of the first industries to leverage and promote the self-service technology concept to allow the client to become a virtual teller for banks, carrying out transactions for their account in much the same way a personnel would. Self-service distribution channels can be used as a competitive differentiator and have an implication for banks to design more innovative services. Customer participation has always been an indispensable part of any service delivery process. Even in an automatic service customer participation is essential for considerable service performance of ATMs. However, in spite of the increasing number of banks, building new ATMs, there is little academic research on this topic and the implications of this relationship between the two constructs. This research attempted to help in bridging this gap by it investigating the relationship between customer participation and ATMs service performance. Hypotheses formed the basis for this research and were empirically tested by means of regression model. The empirical results (n=1500) identified, that there is a positive impact of customer participation on ATMs service performance. Results of the study show that service performance of ATMs has significant difference across the types of the banks. It means that private banks' customers recorded higher level of service performance from their ATMs, and the level of participation made by the customer is high at private banks. Participation needed for ATMs service performance was identified as essential at all ATMs.The research concluded that customer participation has an effect on ATMs service performance. It is very important to educate the customer for participation in ATMs service delivery. Therefore it is necessary for researchers to design effective system to enhance customer participation in the delivery of banking services via ATMs.

***Key Words**: Customer Participation, Service Performance, ATM, Banking Industry*

INTRODUCTION

Nowadays Automated Teller Machine Services (ATMs) are widely used by the customers rather than personal based banking services. In the starting period ATMs were used to only for cash withdraw proposal without concern of bank timings, but present the scenario changes rapidly, more banking operations like withdrawing, transferring and checking account balance can be carried out with ATMs. Customers' are saving time and money with the use of ATMs. Even most of the financial organizations are using the ATMs to serve customers more effectively and in a timely manner in a way to cut down their production cost, which will be benefit for the organizations and customers. We have successful self-service technologies in the market place today, these are successful because they offer clear benefits to customers, the benefits are well understood and appreciated compared to the alternative delivery modes, and the technology is user friendly and reliable, and customers understand their roles and have the capability to use the technology. Today, self-service technology is challenging the notion that provider-client interaction is an essential feature of services marketing.

Banks concentrated more on the improvement in ATM as a channel differentiator. To reduce the waiting times some banks are going to plan to deploy multifunctional ATMs or interactive kiosks next to the plain ATMs. Also, more facilities or functions lead to longer lines for customer, which gives problem of convenience doing business with an ATM. The users' expectation, enjoyment and control strongly influence service delivery in any service organization. Customer acceptance of new automated channels of service delivery in banks may bring a dramatic change in the way retail banks build and maintain close relationships with their customers. The introduction of new automated channels of service delivery has made customer participation more widely possible. Therefore the customer participation is related to the performance of banking channels.

BACKGROUND OF THE STUDY

The rapid development of IT-based technology options advances the need for research beyond the interpersonal dynamic of service encounters in this technology-oriented context (Meuter et al., 2000). Parasuraman and Grewal (2000) emphasized the importance of technology in shaping buyer-seller interactions and recommended further investigation into the impact of technology, The quality issues of automated services in the banking context are becoming important because of their potential influence on: attractiveness, customer retention, profitability, positive word-of-mouth, and maximum competitive advantages (Moutinho and Smith, 2000; Nguyen and Leblanc, 1998; Santos, 2003). Continuous improvements in the information technology have enabled banks to provide their services in a more direct manner to adjust their products better to the clienteles' needs.

Design of self-service delivery systems can has significant competitive implications in service industry (Heskett et al. 1997). The Automatic teller machines are the one of the self-service technologies to facilitate many customer services as cash checks, deposit checks without an envelope, print coupons, traveler's checks, phone cards, plane and theater tickets and can print monthly bank statements. Customer participation has always been an indispensable part of any service delivery process (Chase, 1978).

If automated service quality converges and becomes a standard and non-differentiated attribute among all banks, it will be easy for customers to compare and switch from one bank to another (Evans and Wurster, 1997). If so, it will be difficult for banks to maximize their profits out of the quality aspects of automated services. In view of the findings, the provision of high standards of automated service quality and maintaining a significant level of customer participation will lead to improved ATMs service performance.

Experts believe that services can be delivered most efficiently if customers truly are viewed as partial employees and their participative roles are designed to maximize their contributions to the service creation process (Mills *et al.*, 1983). Customers can play in services delivery is that of contributor to their own satisfaction and the ultimate quality of the services they receive. Customers may not care that they have increased the productivity of the organization through their participation, but banks should aware of that and educate the customer on their contribution in the service delivery for further modification in ATMs. In some cases, there is a price discount advantage for self-service, but other times, customers may be motivated by convenience, a sense of greater control over the service outcome, timing of delivery, or simple enjoyment of the task (Dabholkar, 1996).

RESEARCH PROBLEM

The banking organizations have to implement new technological aspects with strong in security system in way of ensuring the customer about their transactions carried out in a perfect manner. In the future many of the banks will be able to deliver highly trustworthy, approachable, modified services through technology and will offer easy and effective means for service recovery when failure does occur. Performance of ATMs mainly requires three factors such as customer participation, participation of machine itself, and the level of technology. Participation of the machine (ATM) is designed according to the organizational requirements and the available of technology, mainly the organizational requirements for ATMs design are decided by the customer and their needs for the service. Even it is a machine ATMs are designed based on some instructions to be followed for the requirements made by the client. Customers seek the ATM for getting easy and quick services in their off time. In each service encounters customer participations employee participations both are essentials, but ATMs are machines, do these need customer participation? Researchers argue that in any service encounters customer participation is essential for service quality, and performance out comes. Research gap exists here whether the customer participation in automatic service delivery determine its performance.Therefore it is essential to study the impact of customer participation on ATM service performance.

RESEARCH QUESTION

Is there any significant relationship between customer participation and ATMs service performance?

OBJECTIVES

The main objective of the study is to investigate the impact of customer participation on ATMs service performance. The specific objectives are;

1. To identify the level of customer participation exists in customer services via ATMs in the banking sector of Sri Lanka.
2. To identify the significant different between the ATMs service performance across thecustomer participation levels

SIGNIFICANCE OF THE STUDY

This study is significant, because the findings of this research effort may have practical implications for service Providers that strive to organize their ATM service offerings in order to accomplish their corporate objectives. The study will help or assist banks to enhance their understanding of the relationship between the customer participation and ATMs service performance to make decision regarding introducing innovative banking services via ATM.This research may encourage further study and provide useful guidelines for these types of researches.

LITERATURE REVIEW

Customer participation is a fundamental part of service delivery, and is particularly important in any service. By participating in the process of service customer benefits to service organization and also the customer themselves. Customers are often simultaneously consumers and producers as the creation of the service is in part dependent on the participation and cooperation of the customer (Langeard, Bateson, Lovelock and Eiglier, 1981).

According to John Mc Gill (2004), an automated teller machine (ATM) is a computerized telecommunications device that provides the customers of a financial institution with access to financial transactions in a public space without the need for a human clerk or bank teller. ATMs are known by various casual terms including automated banking machine, money machine, bank machine, cash machine, hole-in-the-wall and cash point (Lockett and Littler 1999).

"Automated service quality" is defined as the customer's overall evaluation of the services provided through electronic channels, such as the internet, telephone and ATMs (Santos, 2003). It is proposed that customer perceptions and preferences of service quality have a significant impact on a bank's success. Analyzing markets based on customer perceptions, designing a service delivery system that meets customer needs, and enhancing levels of service performance are pertinent objectives for banks to gain and retain a competitive advantage (Brown and Swarts, 1989).

Customer participation in service production raises a number of issues for organizations. Because customers can influence both the quality and quantity of production, some experts believe that the delivery system should be isolated as much as possible from customer inputs in order to reduce the uncertainty customers can bring into the production process. This view reasons that the less direct contact there is between the customer and the service production system, the greater the potential for the system to operate at peak efficiency (Chase, 1978). The introduction of ATM machines and automated customer service telephone lines in the banking industry are both examples of ways to reduce direct customer contact in that industry, resulting in greater efficiencies and reduced costs.Experts believe that services can be delivered most efficiently if customers truly are viewed as partial employees and their participative roles are designed to maximize their contributions to the service creation process. The logic in this case is that organizational productivity can be increased if customers learn to perform service-related activities more effectively (Mills *et al.*, 1983). The extreme case would be full self-service where the customer produces the service for him or herself with very little intervention or support from the

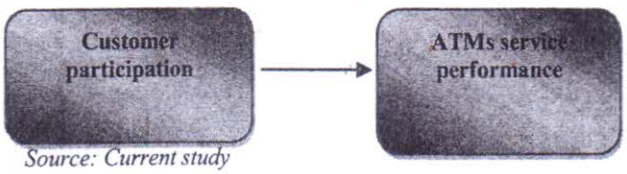
organization's employees. In addition to contributing to their own satisfaction by improving the quality of service delivered to them, some customers simply enjoy participating in service delivery. These customers find the act of participating to be intrinsically attractive (Bateson, 1983, 1985; Dabholkar, 1996). They enjoy using the computer to obtain airline tickets, or they may like to do all of their banking via ATMs and automated phone systems, to interact with service providers through the Internet, or to pump their own gasoline. In some cases, there is a price discount advantage for self-service, but other times, customers may be motivated by convenience, a sense of greater control over the service outcome, timing of delivery, or simple enjoyment of the task (Dabholkar, 1996). Because service customers must participate in service delivery, they frequently blame themselves (at least partially) when things go wrong. If customers believe they are partially (or totally) to blame for the failure, they will be less dissatisfied with the service provider than when they believe the provider is responsible and could have avoided the problem (Bitner, 1990; Folkes, 1988; Hubbert, 1995). Therefore customer participation decides not only the ATMs service performance rather than the quality of the service provider.

Service quality is one of the main factors that determines the success or failure of electronic commerce (Santos, 2003). However, automated service quality has tended to lag behind because practitioners have focused mainly on issues of usability and measurement of use (Buckley, 2003), with little consideration for the outcomes.

Customer participation has been defined as "the degree to which the customer is involved in producing and delivering the service" (Dabholkar 1996). The importance of customer participation is increasingly evident as it offers substantial benefits to the service organization, for example, increased productivity in self-services (Chase, 1978), customer feedback (Kelley, Donnelly and Skinner, 1992), improved service quality (Dabholkar, 1996; Kelley, Donnelly and Skinner, 1990) and greater repurchase and referrals (Cermak, File and Prince, 1994). From a customer's viewpoint, participation contributes to their own satisfaction with the service and service quality perceptions (Kelley, et al,1992; Martin and Pranter, 1989; Cermak, File and Prince, 1994), enhances customer skills in utilising the service (LengnickHall, 1996), increases the likelihood that needs are met and benefits attained (Zeithaml and Bitner, 1996) and increases customer enjoyment (Bateson, 1983).

Fuchs (1968) noted that customers are always either passively or actively involved in the service production process. Research recognized the interaction between the customer and firm (Chase 1978) and the importance of integrating the production role of customers into the design of service delivery systems (Globerson and Maggard 1991). Prior research has also noted that the design of self-service delivery systems can have significant competitive implications (Heskett et al. 1997). Lovelock and Young (1979) utilize case analysis to demonstrate that developing service systems that account for customer needs and preferences is essential to realizing productivity gains from self-service operations. Self-service systems are more than just a standalone feature of the organization. The literature has increasingly focused on the observation that self-service systems need to be integrated with other aspects of organizational design, specially required level of customer participation.

Figure 01: Schematic diagram of the research framework



Source: Current study

Research Hypotheses

H_1: There is a positive impact of customer participation on ATMs service performance

H_2: There is significant different between the level of ATM service performance across three levels of customer participation

METHOD

Population

Population of the study is the people who use the ATM for banking Transactions in the retail banking industry. There are several reasons for selecting the people who use the ATM for banking Transactions in the retail banking industry is the ideal setting in which to disentangle the impact of customer participation on ATMs service performance. First, these customers enjoy multiple channels for their banking transactions. These channels range from full-service teller interactions to completely automated self-service channels as ATMs. As described above, these channels vary in terms of the level of participation each imposes. Second, retail banking customers are a diverse group, with varying needs, preferences and experiences. This variability creates a rich environment in which to analyze the impact of customer participation on ATMs service performance. Moreover, the diverse customer base is common to a wide variety of banks, broadening the relevance of analysis.

Research design

Research that studies the relationship between two or more variables is also referred to as a co relational study (Cooper & Schindler, 2003). That is why a co relational research design has been selected in order to find out the appropriate answers of the research questions and to test the hypotheses. The research model also suggests this type of design. Here, ATMs service performance is considered as the dependent variable, whereas customer participation considered as independent variable. To gather data on the research questions, the researchers used questionnaire. The Rationale behind using questionnaire to collect data is that it takes less time to fill up; Respondent's anonymity can be maintained. Therefore, the customers will not be, reluctant in providing accurate data, Personal interview is both time and cost consuming, and the data gathered through questionnaire is easy to put in quantitative analysis. The researcher conducted survey on a total of 1500 respondents. It was not possible to conduct personal interview because of time limitation. Therefore, questionnaire is the most useful method to collect data for this study. The questionnaire consisted of both closed and open ended questions and had two sections. Section one dealt with general information on the participants. Section two contracted with the data on

relationship between customer participation and service performance in the delivery of banking services via ATM.

Sampling method

The researcher used convenient sampling to select the sample. A sample consisted of 1500 1500 the individual were given the questionnaires, who are the account holders of private and public banks, and use ATMs for getting banking services. The reason behind choosing non-probability sampling is that, the researcher would have gone for probability sampling for the customers, then a sample frame would have been needed to collect and from the list, a sample would have been drawn, which might have been larger enough to meet reasonable time and given cost.Questions were presented in the form of statements on a 1-5 Likert scale.

Techniques of data analysis

Data collected from primary source were analyzed using the computer based statistical data analysis package SPSS (version 16) for reliability and relationship testing. The data analysis included univariate, and multivariate analysis.

Control variables

The customer demographic and account information factors into the analysis includes customer age, the length of the customer's relationship with the bank, the numbers of different types of accounts the customer had (deposit, loan and investment), the aggregate balances for each customer by account type (in thousands of dollars), and whether or not the customer had signed-up for direct deposit service. The inclusion of these control variables helps us avoid omitted variable bias, as several of them have explanatory power and are correlated with the variables of interest.

Table 01: Dimension and aspects of the customer participation and ATMs service performance

construct	dimension	aspects	source
Customer participation	Self-directed effort	Prepared to try everything	
		Persisted at difficult tasks	
		Remembered instructions	
		Performed all tasks	
	Effort with other participants	Made effort to get to know other participants	
		Discussed issues with others participants	
		Friendly towards other participants	
	Instructor director effort	Followed instructions	Christina Chua , Jillian C,(2005)
		Paid attention to instructor	
	Extra effort	Made additional effort outside class	
		Applied things learnt to lifestyle	
		Spent time preparing for course	
ATMs service performance	Speed of delivery	Expected speed	Dabholkar (1996) Normann (1983)
		time	
	Enjoyment	Novelty of technology	Langeard et al (1981)
		Pleasure at delivery of service	
	Control	Real control	(Bateson, 1985). (Glass and singer, 1972; Langer, 1975)
		Chance to change need for situation	
	Ease of use	Ergonomic qualities	Kelley et al (1990)
		Easy instruction	
	Communication/education	Language option	Parasuraman et al (1985)
		Friendliness	
	Personal based support	Interaction with machine	
		comfortable	

Reliability and Validity of the Scales

Reliability

Reliability is defined as an accuracy or precision of a measuring instrument (Ker linger, 1980). Thus reliability refers to the degree to which a measure is free of variable error. The most common way to assess reliability measurement instrument is to evaluate the internal consistency of items in a scale. Internal consistency is the degree of homogeneity among the items that constitute a measure that is the degree to which the items are interrelated and measure a single trait or entity (Brown, 1970). Internal consistency is determined by the statistical examination of the results obtained, typically equated with Cronbach's coefficient alpha. Cronbach's alpha measures the variance over total variance. In this thesis, Cronbach's alpha is used to determine the reliability of scales and results. According to Nunnally (1978) the alpha of a scale should be greater than 0.70 for the items to be used together as a scale. This alpha for the total scale is also computed on the assumption that the item under examination is deleted. Nunnally (1978) gives the common guideline for the alpha standard of reliability: a) early stage of research alpha=0.5-0.6 b) basic research

alpha, alpha= 0.7- 0.8, and c) applied settings, alpha= 0.8-0.9.

Table 02: Results of test –retest

instrument	Test-retest coefficient
Customer participation	0.743
ATMs service performance	0.709

Table 03: Cronbach's alpha coefficients

instrument	Test-retest coefficient
Customer participation	0.843
ATMs service performance	0.809

FINDINGS OF THE STUDY

The demographic profile of the respondents is presented in the table 04, which included gender, age group, marital status, highest level of academic qualification, and type of bank. The total sample for the survey consisted of 1500 respondents. The gender distribution of the survey respondents was 54.4 % males and 45.5 % female. The results also indicated that the samples had age predominantly between 21 and 25, which was 65%. More than 80% of the respondents were single. Majority of the respondents had degree or professional qualification, 13% were master degree holders, 54% of the respondents were at the degree/or professional qualification level and 36% of respondents were diploma/advanced diploma holders. In the total respondents 43% of the respondents were public banks customers and the remaining 57% of the customers are private bank customers. When see the proportion of the respondents based on foreign and local banks 67% of the customers were local bank customers and the 33% of the customers were foreign bank customers.

Table 04: demographic profile of the respondents

variables	category	Fre	%
Gender	Male		54.4
	Female		45.5
Age	≤ 20 years		5.25
	21-25 years		64.9
	26-30 years		22.4
	31-35 years		5.25
	36-40 years		1.19
	≥41 years		0.95
Marital status	Single		80
	married		20
Highest level of academic qualification	Under certification qualification		9.5
	Diploma/advance diploma		35.5
	Degree /professional qualification		53.6
	Master degree		13.12
Public/private			43
foreign/local banks			57
	Public banks		33
	Private banks		67
	Local banks		
	Foreign banks		

For the following purpose for the analysis multiple regression analysis is used to analysis the data of this study 1) to establish the correlation between multiple predictor variables and the dependent variable, 2) examining the extent to which each predictor variable uniquely predicts the dependent variable. That is the multiple regression model enables to consider the unique importance of each independent variables in predicting the dependent variable. 3) Investigating whether one or more predictor variables explain variation in the dependent variable over and above one or more other predictor variables (Levine et al (2008). Therefore to test the hypothesis multiple regression analysis is used in this study

H1: There is a positive impact of customer participation on ATM's service performance

Table 05: Standard regression coefficient

Independent variables: Customer Participation	Dependent variables: ATMs performance
ß	0.970
Significance of F	0.000
Adjusted R^2	0.725

According to the regression results in the Table 05, the fitted model encountered a significant impact of customer participation on ATMs service performance. The R^2 value multiplied by 100 tells the percentage of variance in one variable accounted for by the predictor variables. The adjusted R^2 value is 0.725so, that 72% Percentage is accounted for by the predictor variable. Considering all above facts the, the hypothesis: 1 is being accepted, and it could be proved that there is a significant evident of the impact of customer participation on ATMs service performance.

For the purpose of explaining the impact of customer participation on service performance researcher has used regression model. It is used to test the H: 1 to show the impact of X1 (self-directed effort), X2 (effort with other participants), X3 (instructor directed effort), X4 (extra effort), Y (ATMs service performance). This explained that 72.5% variation by the fitted model. It entails that around 72% of the variation in mobile acceptance is explained by the attitude toward mobile advertising, therefore hypothesis three is accepted.

$$Y=0.556\ X_{0}+1.562\ X_{1}+0.957\ X_{2}+0.086\ X_{3}+0.453X_{4}$$

H2: There is a significant different between the ATMs service performance across the level of customer participation.

To test the above hypothesis independent sample one-way ANOVA was carried out on SPSS. The results as shown in the table 11.3, the mean ATMs service performance scores are 4.3387 (SD=.25984) for high level of customer participation, 3.6441 (SD=.47106) for medium level of customer participation and 1.9638 (SD=.49894) for lower level of customer participation. The 95% of confident intervals for the means are 4.309 to 4.368 for higher level of customer participation, 3.5516 to 3.736 for moderate level, and 1.904 to 1.98 lower for degrees. P value (0.000) is less than 0.05, therefore the H:2 was accepted. It means that there is a significance difference in the ATMs service performance across the level of customer participation.

Table 06: ANOVA results

	Mean	Standard deviation
Higher level	4.3387	.25984
Medium level	3.6441	.47106
Lower level	1.9631	.49894
95% Confidence Interval for Mean	Upper value	Lower value
Higher level	4.309	4.368
Medium level	3.551	3.736
Lower level	1.904	1.987
Significant P value	0.000	

It was found that customer participation for ATMs service performance, in banking sector is at a considerable extent. On the five point scale customer contribution has an average scale of 4.12 out of five points. This reveals that the selected samples from bank customers participate high for banking services via ATM. This study set the level of customer participation ATMs service delivery, on a three types of level higher level lies above 4, medium scale lies between 3≥and 4≤, low degree below scale of 3.

According to the defined level of customer participation, a lie above 4 means that the level of customer participation at private banks ATMs' is at the high level (4.234). Scale related to customer participation at public banks has the value of 3.87, it put down between the range 3 ≤and ≤ 4, and it reveals that the level of customer participation at public bank is at the moderate level. Scale of customer participation in foreign banks 4.6; it means that the level of customer participation at foreign banks' ATM is higher level. These levels defined in line with the Vives's (2005) study on level of degree in commitment and its impact on corporate social responsibility in small medium enterprises in Latin America.

The mean service performance of private banks'ATM score was4.60 (SD=0.196) and score recorded from public banks3.60 (SD=1.12). At the 95% confident intervals for the means are 4.20 to 4.987 for Private Banks and 3.08-312 for public banks. The ATMs service performance scores of private and public banks were compared using an independent sample t-test. The results shows that there was a significant different between the service performance of ATM acrosspublic and private bankp =2.45, P=0.000.

The mean service performance of foreign banks'ATM score was4.870 (SD=0.296) and score recorded from local banks4.690 (SD=0.012). At the 95% confident intervals for the means are 4.670 to 4.987 for ATMs of foreign banks and 4.308-4.831 for ATMs of local banks. The ATMs service performance scores of foreign and local banks were compared using an independent sample t-test. The results shows that there was no significant different between the service performance of ATM acrossforeign and local bank p=6.345, P=0.000.

CONCLUSION AND IMPLICATION

Study concluded that, there is a positive impact of customer participation on ATMs service performance. Multiple regression analysis was used to test the effect of customer participation on ATMs service performance. P value is (0.000), therefore the H:1 was accepted. Independent sample one way ANOVA, independent sample t-test were used to test the H:2 to test the significant mean difference of ATMs performance across the level of customer participation and type of banks (private/public/foreign/local). Study revealed that ATMs performance is differs across the bank types and the level of customer participation. Assumptions for regression analysis were validated using residual analysis, and the model fit for the research was satisfied. Results of the study show that service performance of ATMs shows significance difference across the type of the banks. It means that private banks customers recorded high level service performance from their ATMs, and the level of participation made by the customer is high at private banks. Participation needed for ATMs service performance was identified as essential at all ATMs, but the level varies across the banks. There are 54% of men and 46% of women were in the sample size. Customer participation varies on their educational level, number of years they have been with the bank, there living areas, and types of job they occupied.

Banks need to learn the important aspects of their Technology-Based Self-Service specially ATM, and how these depend on the customer participation in the delivery of ATMs service. These results are in accordance with the development within the banking sector, where ATMs today are noticeably more colorful and user-friendly, and they wants to introduce services that cannot match participation requirement of the services (Normann, 1983).The research concludes that customer participation has an effect on ATMs service performance. It is very important to educate the customer for participation in ATMs service delivery. It gives implication to both customers and the organization to identify the relationship between customer participation and the service performance of ATMs, because if customers do not know the level of their participation in the delivery of services via ATMs, it may have a negative effect on ATMs performance.

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