
M-Commerce Based Personalized Service for Users in India: A Factual Study

Gagan Varshney
IMS Engineering College, Ghaziabad, India.
gag_var_2000@yahoo.co.uk

Abstract

The present study is an attempt to find out if personalization of services is an effective tool to attract more M-commerce users or not in India. The empirical study is done in significance to the mobile service and M-commerce service providers who want to know if they can use personalized services to attract customers. Even an increased number of new subscribers may indicate client preference for personalized services from the provider and even their attractiveness to advertisements on web or mobile is also considered significant. Four main constructs – usefulness of personalized services, amount of messages through advertisement, search engine efficiency, privacy infringement from personalization have been studied. For the purpose of analysis, service subscribers' intention to switch to a new service provider with personalized services is selected as the dependent variable. This empirical study indicates that all four constructs are significant in affecting the decision by subscribers to change to a new mobile service provider. It is found that too many advertisement messages confuse the customers related to relevant information contained in it however they agree that when they feel that a particular personalized service is useful they may switch over to new service provider with that particular personalized service and if advertised through SMS or Web, it is often used. Maximum percentages of customer disagree that SMS advertisements on mobile are useful but equal percentage of the customers agree and disagree with the items that web advertisements are useful, the personalized advertisement on mobile or web reduces the time of information seeking, advertisement on mobile help more in information seeking than advertisement on web and personalized advertisement suits and match their needs more. Maximum percentage of customers agreed that search engine on web or mobile increases searching efficiency. Maximum percentages of customers disagreed that mobile search engine are better than web search engine.

Keywords - Mobile Commerce, Personalized Mobile Services, Search Engines, SMS

Introduction

It has been known for centuries that information is power. What was not known for centuries was how to store information and knowledge in such a way that everybody from anywhere can access it. Today we have information access from anywhere all the time by the state of mobility. 3G mobile phones developed to fulfill the demands of consumers such as videoconferencing and video streaming. Mobile phones are

ideally suited to wireless commerce via the short message service (SMS) transmission. Mobile phones have the potential to be ideal personalized tools. Personalization services are context-specific services to each individual. Business models have been constructed that allow service providers to locate consumers and business to create a revenue generation decision point (Rupp, 2002). Many technology firms are developing a portfolio of engineering service packages that targets at mobile commerce (M-commerce) platforms. For example, on the software side, Qualcomm's BREW and Sun's Java 2 Micro Edition (J2ME) are two mobile application environments (Morgan, 2002). With the large investments, firms are eager to attract new customers and retain their old customers (Chen *et al.*, 2002 and Stahl, 2002). The main disadvantage of M-commerce is that the screens of phones are too small. One screen can display four to five lines of characters. User needs to use scroll up and down if more than four or five lines appear onto the screen. Mobile phones offer reduced user interfaces, little client data storage and limited client business logic. Mobile users are generally reluctant to enter large amounts of data due to the difficulties in keypad usage. It is likely that consumers will become impatient when they read a lot of useless and general advertisements in a limited screen. Regarding this challenge, the provision of personalized services seems to be a promising development in the information-flooding environment (Fink *et al.*, 2002). Personalization has been widely studied on the Web (Perkowitz *et al.*, 1998, Perkowitz *et al.*, 2000 and Ramakrishnan, 2000). The objective is to create a one-to-one relationship with the current customers and providing clients with uninterrupted relevant contents (Ardissono *et al.*, 2002). With personalization, the amount of messages sent to the customers will be reduced. The users will no longer receive numerous irrelevant messages. With smaller amount of messages, the users can view the message title, and hence select the interesting piece of news, more easily. Consequently, it is likely that personalization can solve the problem of small screen display in M-commerce. However, the question is whether or not personalization is an effective tool to attract more subscribers. The findings from this study will answer that question. The research will produce data from an empirical study, which will determine whether a mobile service provider can use personalized services to attract subscribers to switch to any particular company. An increased number of new subscribers would indicate client preference for personalized services from the provider. A survey study was administrated to collect data on personalization mobile services from service consumers, who were knowledgeable about personalization. The paper is organized as follows. We are presently in section one which tells about the Mobile commerce and the research objectives and it also covers the review results done to form the hypothesis. Section 2 provides the study background and states the research hypotheses. Section 3 presents the operationalization of variables and Section 4 describes the findings. Section 5 sets out the interpretations. Conclusions will be presented in the Section 6.

The Study

The present study investigates the factors that motivate or inhibit the tendency for mobile phone users to change to a new service provider with personalized services. When comparison is made between M-commerce and E-commerce, the major weaknesses in M-commerce include the limited information display area for navigation and the limited client data storage. In addition, the keypad is too small for the users to select their options freely. Mobile users are, therefore, generally reluctant to spend time browsing and reading broadcast messages. Also, broadcast messages can be regarded as a kind of interruptions. Marketing researchers have pointed out that people are inclined to feel annoyed with interruptions. Also,

their working efficiency is lowered when the frequency of interruption increases (Xia *et al.*, 2002). Intuitively, customers prefer personalized services to general services. However, it has not been established whether personalization is the factor that motivates customers to change their service provider. Therefore, the proposed Hypothesis is as follows:

H1: When a user perceives the personalized service to be useful he will tend to switch to the service provider with personalized services.

H2: Amount and usefulness of an advertisement on a portal influences the consumer's usability for that portal.

H3: Search engine efficiency and information seeking cost influences the consumer's decision on choosing a better service provider/portal.

H4: Privacy concern in personalization discourages consumers to switch to a service provider with personalized services.

Variable Operationalisation

Data collection and samples

Questionnaire was developed for personalization services in M-commerce. The questionnaire consisted of 15 questions and all the questions were measured on the scale of 4- points. The survey was made on 500 people from National Capital Region (NCR) of India, which exactly has representation or presence of people from adjoining three big states of India which make it more suitable as the true representative of the population. Random sampling was done from a list of white collar people working for companies in different sectors because these subscribers are considered to be the most suitable prospective customers for M- Commerce and are likely to choose their service provider based on criterion mentioned by researchers in the literature survey.

Measurements of Variables

About constructs

Usefulness of personalized services consists of four items and the reliability of this construct is 0.8772. Usefulness is defined as the degree to which a person believes that using a particular system would enhance his job performance and consumer will tend to switch to the service provider with personalized services. Amount of messages through advertisement consists of six items and the reliability of this construct is 0.9523. Amount and usefulness of an advertisement on the portal influences the consumer's usability for that portal. Search engine efficiency consists of three items and the reliability of this construct is 0.9467. Search engine efficiency and information seeking cost influences the consumer's decision on choosing a better service provider/portal. Privacy infringement from personalization consists of two items and the reliability of this construct is 0.8898. Privacy concern in personalization discourages the consumers to switch to a service provider with personalized services.

About items

Construct (factor) 'Usefulness of personalized services' is made up of four items like after seeing an

advertisement of a company providing personalized E-commerce service, a customer switches over to that service provider. This item has been developed with the purpose to ask if personalization is the factor that motivates the customers to switch over to that service provider that provides personalized E-commerce service. The item When a customer feels that a particular personalized service is useful, he switches to the service provider that provides a particular personalized service has been developed with the purpose to ask if personalization services are context specific services for an individual or not and if one finds that the personalized service is useful to him whether he will switch over to service provider or not. Personalized advertisement on mobile or web reduces the time of information seeking. This item has been developed with the purpose to know if personalized advertisement on mobile or web creates one to one relationship with the customers and provides clients with an uninterrupted relevant content. This may reduce the time of information seeking for the customers. The item Personalized advertisement suits and match customers needs has been developed with the purpose to know that the users receiving numerous messages as personalized advertisement, which is an attractive tool to attract more subscribers, really suits and match their needs or not. Construct (factor) 'Amount of messages through advertisement' is made up of six items like Mobile service provider sends too many SMS advertisement to read. Mobile service providers being eager to their attract customers sends too many SMS messages to them and increase their business without knowing whether these message are useful or not and if these messages are too many to be read by the customer. Too many pop-ups are read while checking mail through web. This item has been developed with the purpose to ask for a comparison of number of pop-ups need by the customer while checking mail on web or WAP. SMS advertisements on mobile are useful. This item has been developed with the purpose to know if the customers using mobile phone can get information anywhere, any time. The item Web advertisements are more useful than SMS advertisements has been developed with the purpose to make a comparison between the usefulness of SMS advertisement on web or WAP. New services advertised through SMS or Web is often used. This item has been developed with the purpose to know if the customers really uses or not the new services, provided by the service providers through SMS or web. Advertisements on mobile help more in information seeking than advertisement on Web. This item has been developed with the purpose to ask the customers whether advertisement on mobile is more information seeking or advertisement on the computer is more information seeking. Construct (factor) 'Search engine efficiency' is made up of three items like search engine on web or mobile increases searching efficiency. This item has been developed with the purpose to ask that the customer if searching any information by using search engine on computer or mobile increases their efficiency or not. The item Mobile search engines are better than web search engine has been developed with the purpose to ask the customer, which search engine is better to access information, mobile search engine or web search engine. The item Information seeking through mobile is costlier than information seeking through web has been developed with the purpose to know if the customer feels that accessing any information through computer is costly or through mobile it is more costly.

Construct (factor) 'Privacy infringement from personalization' is made up of two items like personalized technology infringes privacy. This item has been developed with the purpose to ask if the customer feels that the service provider collecting their information infringes their privacy. The item Customer don't want his personal information collected by service providers to be used for personalization analysis has been developed with the purpose to ask if the customers get annoyed when they find that the personal information is collected by the service provider for analysis purpose.

Reliability and Validity of Construct

All independent variables are standardized and then grouped by factor analysis. Principal Components Analysis is employed for factor extraction. The independent factors are Usefulness of personalized services (FX1), Amount of messages through advertisement (FX2), Search engine efficiency (FX3) and Privacy Infringement from Personalization (FX4). These factors explain 85.34% of the total variance in the survey. Items load highly (> 0.60) on their associated factors. The factors, which are discussed, have been evaluated for reliability, convergent validity and discriminant validity. The whole statistical analysis was performed with SPSS version 15.0. In the reliability test, the internal consistency for each factor was assessed by computing Cronbach's alpha (Table 1). Nunnally (1978) suggests that a reliability value of 0.8 or above is acceptable. Hence, all factors are deemed reliable.

Table 1: Reliability

Constructs	Items	Reliability
Usefulness of personalized services	4	0.8772
Amount of messages through advertisement	6	0.9523
Search engine efficiency	3	0.9467
Privacy infringement from personalization	2	0.8898

Results

Descriptive statistics on the four latent factors are depicted in Table 2 below.

Table 2: Descriptive statistics

Factors	N	Mean	S.D.	S.Error	Z _{Cal}	Z _{tab}
Usefulness of personalized services	250	130	14.10	0.89	11.23	1.29
Amount of messages through advertisement	250	165	23.3	1.4	7.14	1.29
Search engine efficiency	250	86	13.4	0.847	7.08	1.29
Privacy infringement from personalization	250	62	7.9	0.49	1.03	1.29

Items scaling

FX1: Usefulness of personalized services (Table 3)

Table 3: Scaling results for item 1(FX1)

FX1: (1=Strongly Disagree, 4=Strongly Agree)

Items	Mean	S.D.
X1	2.35	0.670
X2	2.75	0.500
X8	2.60	0.741
X10	2.45	0.707

FX2: Amount of messages through advertisement (Table 4)

Table 4: Scaling results for item 2(FX2)

FX2: (1=Strongly Disagree, 4=Strongly Agree)

Items	Mean	S.D.
X3	2.40	1.070
X4	2.60	0.894
X5	2.20	0.836
X6	2.40	0.836
X7	2.80	0.632
X9	2.45	0.741

FX3: Search engine efficiency (Table 5)

Table 5: Scaling results for item 3 (FX3)

FX3: (1=Strongly Disagree, 4=Strongly Agree)

Items	Mean	S.D.
X11	2.95	0.670
X12	2.30	0.774
X13	3.05	0.591

FX4: Privacy Infringement from Personalization (Table 6)

Table 6: Scaling results for item 4 (FX4)

FX4: (1=Strongly Disagree, 4=Strongly Agree)

Items	Mean	S.D.
X14	2.9	0.547
X15	3.0	0.632

Interpretation

Since all the Z_{cal} values for hypothesis H1, H2, H3 are more than Z_{tab} values hence these three hypotheses are accepted while the Z_{cal} value of H4 is less than Z_{tab} value hence hypothesis H4 is rejected. From the survey it is interpreted that if the customers perceive a personalized service is useful to them they may switch over to the service provider with better personalized services (Mean 130) and even they don't get influenced by the amount and usefulness of an advertisement irrespective of the fact that it is advertised on a Web or WAP (Mean 165) and moreover they may not chose a portal based on the usefulness of these advertisements on any of the mentioned portals but search engine efficiency and cost of information seeking definitely act as a deciding factor for a customer to chose a particular service provider/portal (Mean 86). Privacy infringement do not effect subscriber decision to switch to a new service provider rather than customers are more concern regarding the usefulness of personalized message than the

privacy issues which may arise due to the collection of information service provider saying that it will utilize for personalized service (Mean 62).

Conclusion

It is found that there are too many advertisement messages and it is very difficult to locate a piece of useful information from these messages and this is the reason why the maximum percentage of customer disagree to the fact that after merely seeing an advertisement of a company they may switch over to that service provider. Maximum percentage of customers agree that when they feel that a particular personalized service is useful they switches over to service provider with that particular personalized service. Maximum percentages of customer agree that mobile service provider sends them too many SMS advertisement. Almost equal percentages of customers agree and disagree with the item that when they see their E-mail, they got lot many pop-ups. Maximum percentages of customers disagree that SMS advertisements on mobile are useful. Almost equal percentage of the customers agrees and disagrees with the item that web advertisements are useful. Maximum percentages of customers agree that new service advertised through SMS or Web is often used. Almost equal percentages of customers agree and disagree that the personalized advertisement on mobile or web reduces the time of information seeking. Equal percentages of customers agree and disagree with the item that advertisement on mobile help more in information seeking than advertisement on web. Similarly equal percentages of customers agree and disagree with the item that personalized advertisement suits and match their needs. Maximum percentages of customers agree that search engine on web or mobile increases searching efficiency. Maximum percentages of customers disagree that mobile search engine are better than web search engine. Maximum percentages of customers agree with the item that information seeking through mobile is costlier than information seeking through web. Maximum percentages of customers also agree that personalized technology to collect their personal data infringes their privacy and finally maximum percentages of customers agree with the item that they don't want their personal information collected by service providers to be used for personalization analysis.

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