

## FACTOR AFFECTING CUSTOMER ADAPTATION TOWARDS MOBILE APPS IN WEST BENGAL

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### **ABSTRACT**

*In present scenario most of the organizations are developing mobile apps which is a way to save considerable amount of time and money because these apps can help to boost employees' productivity. Apps are now becoming an integral part of our day to day life. Time spent on mobile is skyrocketing. Due to this, these apps are progressing drastically. Through a mobile application, users can accomplish a difficult and time-consuming business process in just a few minutes or even seconds. Customers also benefit from the convenience, speed and round-the-clock availability of apps services. Though mobile apps provides many advantages, there are still a significant number of customers who refuse or reluctant to adopt the facilities of apps services. In India the adoption rate of the technology is significantly different from other nations because of the country's unique social and economical characteristics. The aim of this research study is to investigate the factors influencing the adoption of mobile apps in West Bengal, India. The Paper provides a detailed understanding of how and why specific factors affect the consumer decision. Survey from 150 local respondents was used to accomplish this objective. This research study would also help in understanding various reasons for this resistance (reluctance) and would be useful for organizations in formulating strategies aimed at increasing the overall usage of the technology.*

**Keywords:** *Customer Adoption behaviour, Mobile Apps, Performance ,Security, Timely Information, User Friendly.*

### **I. INTRODUCTION**

A mobile application marketplace is software which allows the user to download mobile apps for their smart phone. Free applications may be found in these marketplaces along those offered for sale. In most cases, apps are programmed by third party developers notably companies hoping to advertise and enhance their existing products, or by freelance programmers who sell their apps for revenue.

However, one of the major challenges of both m-commerce developers and user is the need to know consumers' perception of m-commerce applications in order to better design and deliver m-commerce service.

E-Marketer (2015) has estimated that more than 2 billion people worldwide will own and use smart phones by the end of 2016, representing a 31% increase over 2014. The United States is the second largest smart phone market, behind China, and is projected to have 207 million users by the end of 2016. As of January 2014, about

75% of U.S. adults owned smart phones (E-Marketer, 2015). Among young adults aged 18-34, however, smart phone penetration increased to 83% (Pew Research Center, 2015).

A smart phone is a mobile phone which runs on a mobile operating system as it provides more advanced computing capability. Smartphone provide a greater range of functions compared to standard mobile phones. In addition to calling, texting, and email functions, smart phones offer application software – or mobile apps – that allow easy access to a wide range of services. Mobile apps, which became available in 2008, are distributed by mobile operating systems such as Apple, Google, and Windows and are downloaded from the application platform to smart phones. Apps are available in two forms: free (with ads) and paid (without ads). Approximately 90% of apps downloads worldwide are free apps indicating that consumers want free apps more than they want to avoid advertising (Gartner 2013).

As of December 2015, the Apple App Store alone offered 1.5 million different apps (Apple, 2016). The App Store organizes the apps into the following categories: games, education, entertainment, lifestyle, business, books, utilities, travel, music, and sports. Smartphone owners can download apps for anything from weather reports to movie ticket purchases.

## II. LITERATURE REVIEW

A new model for investigating consumer's behavioural intention in mobile advertising is developed and related to mobile marketing theory and practice (Mika Westerlund, RistoRajala 2009). However attributes of environment and cultural influences are explore to develop a model on consumer attitudes towards M-Commerce (Qi Ying Su et al.2010).

The conventional shopping process involves a human being have to visit the store personally for purchasing the item.. A purchase decision is then made according to the information so gathered. However, a number of unique challenges a company have to face, if he/she prefers to execute this process using a mobile device. Taking this aspect into consideration, Ryan Anthony Brown et al. (2011) propose the use of an Intelligent Agent for performing the Mobile Shopping on behalf of customers.

Antero Juntunen (2012) analyze the NFC mobile ticketing business model holistically from a techno-economic viewpoint and identify the critical business model issues that affect the commercial deployment of such services. Using single case methodology, the authors evaluate the NFC (Near field Communication) mobile ticketing business model with the help of the Service, Technology, Organization, Finance STOF Model.

M-Commerce validates the user satisfaction and technology acceptance model in business to customer (Morteza Ghobakhaloo et al. 2013). M-Tourism usability can be procure by emphasizing on the significance of fast and reliable access to content, as well as the quality – particularly conciseness, accuracy and coverage – of the relevant information (AlessandroInversini et al. 2013).

ShaikShakedAhamad (2014) identified a Secure and Optimized Proximity Mobile Payment (SOPMP) Framework using NFC (Near Field Communication) technology. Khaing Sandar et al.(2014) illustrated that although Google clouds offers a poor performance but it is the most cost effective compared to other clouds. Mobile apps must design in such a way , so that it can use to call for more novel data to influence eco friendly behavior (Eli Typhina2015). Mobile apps contributes to exploration of strategic moves by mobile payment

innovates through platform ecosystem (JunyingZhong 2016). According to a recent survey, more than half of all such apps are rarely been downloaded. The study thus examines consumer stickiness to continue to use mobile apps, using the post-acceptance model of information system continuance and technology acceptance model. (I-Chan Fang, Shih-Chieh Fang )

### III. RESEARCH OBJECTIVES

- To find out the dimension of consumer preferences regarding the usage of mobile apps in West Bengal.

### IV. RESEARCH METHODOLOGY

#### 4.1 Data Collection Methodology and Sample Plan

The present study is descriptive, exploratory and empirical in nature .To meet the objectives of the study stated above both qualitative and quantitative techniques are to be used.

#### 4.2 Data source

**Primary Data :** Primary data collection is based on mainly the information available through a structured questionnaire among conveniently selected respondents of different categories and a pilot survey is done to finalize it.

Proposed questionnaire contain two parts: i) the demographic details of the respondents it consist questions pertaining to the respondents' demographic profiles, such as age, gender, educational qualification, and annual income were asked.

ii) Part 2 consisted of 19 questions (Consumer Opinion) had questions related to major drivers of mobile apps and questions relating to their preferences and perceptions about the technology to be measured using 5-point Likert Summated scale. All the 19 questions of the questionnaire is used a likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The researcher administered the instruments personally to the Convenient sampling techniques is adopted to collect primary data from respondents through final questionnaire. Survey is conducted among 150 respondent of West Bengal.

**Secondary Data:** Moreover, available information on this context published in different journals, books and magazines and websites is taken into consideration for the study as secondary source.

#### 4.3 Sampling Plan

**Population:** Smart phone user across all demographic characteristics.

**Sampling Frame:** Customer List (s) of the selected Local mobile shop / local service provider and selected user of social networking sites.

**Sample Units:** Smart phone user of West Bengal across all demographic attributes.

**Sampling Method:** Randomly some local mobile shops to be selected for customer lists. Buyers of smart phones are selected using **Simple Random Sampling Without Replacement**

**Sample size:** 150 (approximately)

### V. DATA ANALYSES METHODOLOGY

The data collected from the survey will be subjected to data cleaning in order to identify missing value, sample characteristics and meet the assumptions of normality. After this, the

Descriptive statistics and frequency distribution tables are used to summarize the respondents' demography. Exploratory factor analysis is used to reduce the complexity of the data set and group the similar types of variables into related factors. The latent factors can then be studied and renamed to develop the dimensions. In this case, the principal component analysis with varimax rotation will therefore be conducted on all the variables to extract factors from the scales of each construct. The researchers will ensure that all items meet the acceptable limit level. Therefore, in this study, all items below 0.50 will not be retained and those having a loading factor limit of above 0.50 will all be retained. The validity of the instrument will be determined by content and construct validity. The construct validity will be determined through the factor analysis in which the Kaiser- Meyer (KMO) index of sampling adequacy and Bartlett's test of sphericity will equally be determined. All variables with KMO above .6 will be regarded as valid for this proposed study.

## VI. EMPIRICS

The demographics of the respondent is presented under the 5 attributes i.e. age, gender, qualification, profession, income level. The following table(s) depicts the respondent's profile. As far as gender is concerned 53.33% are female and 46.67% are male. Almost 65.33% of the respondents were between 21-35 years old . 22.67% followed by the age group of 36 - 44 years. On the other hand, 18 respondents 12% were below 21 years of age As per educational qualification 69% of the respondents were Graduates followed by 16% higher secondary, Post graduates 50% and others(s) only 15%.

**TABLE 1**

**Gender of respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
female	80	53.33	53.33	53.33
Valid male	70	46.67	46.67	100.0
Total	150	100.0	100.0	

**TABLE 2**

**Age**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 21-35	98	65.33	65.33	65.33
36-50	34	22.67	22.67	88
below 21	18	12	12	100.0
Total	150	100.0	100.0	

**TABLE 3**  
**Educational Qualification**

	<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
<i>graduate</i>	69	46	46	46
<i>higher secondary</i>	16	10.67	10.67	56.67
<i>post graduate</i>	50	33.33	33.33	90
<i>others</i>	15	10	10	100.0
<i>Total</i>	150	100.0	100.0	

### Factor Analysis Result

A total of 150 respondents were surveyed using the questionnaire. The raw data was analyzed using SPSS 20.0 (Green et al., 2000) and factor analysis in order to summarize the 19 variables (as each question in Part - 2 (Consumer opinion) of survey questionnaire represent one variable) into smaller sets. Then data was subjected to principal component analysis. Hence, these 19 variables were reduced to four principal components through varimax rotation (Table 6). Items with factor loadings of 0.40 or higher were clustered together to form separate constructs, as recommended by Hair et al. (2006). Here, the researcher had considered only those factors whose Eigen-values is more than one, as significant. Table 5 indicates that, in the present test the Kaiser-Meyer-Olkin (KMO) measure was 0.671. Bartlett's sphericity test also found highly significant; Chi-Square = 421.92, df = 171 with a significance of 0.000 it provide support for validity of the factor analysis of the data set and indicates that, factor analysis is appropriate. From table 5 it is observed that out of 19 variable 9 variable is extracted total variance explained 81.865 % , where the value of component greater than 1 is considered

**TABLE -4**

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.671
Approx. Chi-Square		421.92
Bartlett's Test of Sphericity	Df	171
	Sig.	.000

**TABLE 5**

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.953	15.544	15.544	2.953	15.544	15.544	2.107	11.092	11.092
2	2.552	13.430	28.974	2.552	13.430	28.974	2.055	10.818	21.910
3	1.931	10.164	39.139	1.931	10.164	39.139	1.916	10.085	31.995
4	1.807	9.512	48.651	1.807	9.512	48.651	1.875	9.867	41.862
5	1.633	8.597	57.248	1.633	8.597	57.248	1.752	9.221	51.082
6	1.324	6.970	64.218	1.324	6.970	64.218	1.697	8.933	60.015
7	1.264	6.654	70.872	1.264	6.654	70.872	1.423	7.490	67.505
8	1.058	5.566	76.438	1.058	5.566	76.438	1.418	7.464	74.969
9	1.031	5.427	81.865	1.031	5.427	81.865	1.310	6.896	81.865
10	.868	4.570	86.435						
11	.564	2.971	89.406						
12	.431	2.267	91.674						
13	.410	2.159	93.833						
14	.331	1.742	95.574						
15	.252	1.329	96.903						
16	.210	1.105	98.007						
17	.166	.872	98.879						
18	.114	.601	99.480						
19	.099	.520	100.000						

Extraction Method: Principal Component Analysis.

**TABLE 6**

**Rotated Component Matrix**

	Component								
	1	2	3	4	5	6	7	8	9
V1	.071	-.151	.030	-.013	.164	.791	-.365	-.109	.007
V2	-.238	-.002	.118	.032	-.095	.725	.097	.003	.168
V3	.284	.050	-.166	.431	.723	-.025	-.131	.033	-.108
V4	.631	-.063	.063	.107	.490	-.111	.087	-.073	.041
V5	-.047	-.043	-.029	-.030	.019	-.104	.936	-.159	-.032

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V6	.082	-.091	.296	.170	-.229	.389	.157	.393	-.515
V7	-.056	-.049	.241	.881	.014	-.142	.002	.024	.051
V8	.151	.034	-.080	.857	.048	.176	-.021	.013	-.047
V9	.811	-.007	.265	-.037	-.127	-.026	-.240	-.059	-.157
V10	.416	.681	.117	-.208	-.232	-.189	-.078	.038	.314
V11	.082	.882	-.122	.101	.163	-.129	.203	-.131	-.089
V12	-.338	.840	-.031	-.018	.069	.085	-.256	.123	-.094
V13	-.021	-.065	.007	.040	-.057	.223	.010	.146	.899
V14	.690	.021	-.131	.217	.168	-.096	.119	.414	.074
V15	-.076	.103	.136	-.145	.811	.064	.067	.306	.033
V16	.037	-.020	-.064	.004	.291	-.071	-.229	.863	.118
V17	-.194	-.213	.747	-.007	.104	.230	.121	-.355	.082
V18	.174	-.011	.770	.081	.074	-.281	-.307	-.036	-.150
V19	.169	.054	.653	.066	-.077	.246	.071	.156	.007

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 16 iterations.

In the Rotated Component Matrix table, each number represents the partial correlation coefficient between variable and rotated component. All the variables having factor loadings of greater than .50 for a given component define the component. The following (Table 6) displays the variables constituting the 6 components.

**TABLE 6 - Factor Nomenclature**

S.NO	Variables	Name of factors (Latent variables)
1	<ul style="list-style-type: none"> <li>It saves considerable amount of time.</li> <li>The information received through apps is highly useful</li> <li>Using a apps to shop online fits my life style</li> </ul>	Timely information
2	<ul style="list-style-type: none"> <li>Smart phones have enough security to make me feel comfortable in using apps</li> <li>I feel assured that legal and security measures adequately protect me in using apps</li> <li>Encryption and other technological security advances on internet make it safe for me to make transaction there</li> </ul>	Security
3	<ul style="list-style-type: none"> <li>Registration process is very complex and long while installing apps</li> <li>Slow performance or some time no performance , makes frustrating while using apps</li> <li>Mobile apps should offer fewer navigation pages</li> <li>Downloading of mobile apps may sometime make my device slow</li> </ul>	Ensure better performance



	<ul style="list-style-type: none"><li>• My mobile keeps beeping every hour because of push notification from various mobile</li></ul>	
4	<ul style="list-style-type: none"><li>• It would be ease in using apps if a shortcut is provided to frequently used transaction.</li><li>• Use of modern tools and technologies for effecting services delivery</li></ul>	Highly effective technology
5	<ul style="list-style-type: none"><li>• It is very easy to operate my apps</li><li>• I would imagine that most people would learn to use this system very quickly</li><li>• It is convenient for me inputting data</li></ul>	User friendliness
6	<ul style="list-style-type: none"><li>• I am skeptical of disclosing the personal details while using the apps</li><li>• I think using mobile apps in monetary transaction has potential risk</li></ul>	Perceived monetary risk

## VII. CONCLUSION AND SUGGESTION

The derived factors represent different elements of mobile apps which form the underlying factors from the original 19 scale response items given. Referring to Table 6, it is evident that people associate themselves with the usage of mobile apps on the basis of following factors-

- **Timely information**
- **Security**
- **Ensure better performance**
- **Highly effective technology**
- **User Friendliness**
- **Perceived monetary risk**

Thus the companies looking forward to transact through mobile apps and the existing companies already providing apps facilities , so all need to have focus on all the above factors. The most prominent and vital characteristic for adoption of any new technology, is generating awareness among the customers and educating them about that specific technology. Hence, if the consumers of West Bengal are not adopting mobile apps, it may be because they are not aware about such a service being available and the added value that it offers. They should simplify the initial setup process and also provide troubleshooting.

The first factor is **timely information** which means the best and easiest way track any app is to procure the information in time by the company. Company can access certain policy information by using web service calls through apps.

**Security** is another factor where the company must provide extra security control to customer using mobile apps overcome with the mobile challenges. This may lead greater customer adaptability.

The best way to **ensure outstanding mobile performance** is to provide high-speed, robust (minimal dropped packets and timeouts) end-to-end network connectivity that includes LTE or high-speed Wi-Fi.

Company have to develop **highly effective technology** in near future which may comprise various unique features such as high speed ,better customer engagement , revenue maximization.



Apps can be **user friendly** if it is fast responsiveness, free from ads, it should not create any stubble for customer to rate an apps very frequently. Usability will enhance if it can be used even in offline.

**Perceived monetary risk** is another factor of mobile apps. To control the risk factor marketers has to provide consumer reassurance and information. Improve application as well as online payment information security and privacy, train & advise e-customers for following secure online transaction practices and other risk related factors.

## REFERENCE

- [1] A. I., & L. V. (2013). Tourism mobile application usability -The case of iTicono. *International Journal of E- Service and Mobile Apps*, 5(2).
- [2] A. J., & V. K. (2012). Critical business model issues in deploying NFC technology for mobile service: Case mobile ticketing. *International Journal of E- Service and Mobile Apps*, 4(3), 23-41.
- [3] Ahemed, S. S., & Siba, V. S. (2014). A secured and optimized proximity mobile payment frame work with formal verification. *International Journal of E- Service and Mobile Apps*, 6(1), 66-92.
- [4] Bresnahan, Timothy and Davis, Jason P. and Yin, Pai-Ling, Economic value creation in mobile applications (March 2014). NBER volume on Science and innovation policy, forthcoming; *Stanford University Graduate School of Business Research Paper* No. 14-08.
- [5] Brown, R. A., & Narayan, S. S. (2011). Intelligent store agent for mobile shopping. *International Journal of E- Service and Mobile Apps*, 3(1), 57-72.
- [6] E. T. (2015). Eco - Apps design to influence environmentally friendly behavior. *International Journal of E- Service and Mobile Apps*, 7(1), 1-21.
- [7] J. Z. (2016). Platform as strategy collective innovation in mobile payment eco system. *International Journal of E- Service and Mobile Apps*, 8(1), 18-36.
- [8] K. S., & Y. M. (2014). Cost effective for erlanger traffic of mobile learning over clouds. *International Journal of E- Service and Mobile Apps*, 6(2), 1-11.
- [9] M. G., & T. S. (2013). Adaptation of mobile commerce the market of end user satisfaction on system acutance. *International Journal of E- Service and Mobile Apps*, 5(1), 26-50.
- [10] R. H., D. F., & D. D. (7-may 2013). Usability of mobile applications: Literature review and rationale for a new usability model. *Journal of Interaction Science*.
- [11] Su, Q. Y., & C. A. (2010). Consumer attitude towards mobile commerce- A model to capture cultural and environmental influence. *International Journal of E- Service and Mobile Apps*, 2(2), 1-25.
- [12] Yang, K. C. (august 2005). Telemetric and informatics. *Exploring Factors Affecting the Adoption of Mobile Commerce in Singapore*, 22(03), 257-277