Innovations

Consumers Perception on Mobile Banking Services: One-Way ANOVA Analysis

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Abstract

The current study is attempted to know the consumers' perception towards mobile banking uses in Haryana based primary data. An adepted questionnaire has been used to collect the data from the 229 respondents of two district of Haryana. The data has been analyzed by applying the t-tests, one-way ANOVA and Welch tests. The study found that use of mobile banking services without any assistant and these services would be use in future even if the system is changed which has been suggested by male respondents. Middle age and student groups respondents believe they have enough skilled for use of mobile banking services. Mobile banking services access from anytime everywhere has been confirmed by lower age, urban and student's groups.

Keywords: *Customer Perception, Mobile banking, electronic banking, ANOVA*

1. Introduction

Due to digitalization banks are going through the most significant move in their history as customers move online and become more mobile. E-commerce allows the purchasing and selling of physical goods via online platforms, which makes payment easy for businessmen and customers (Negerand Uddin, 2020; Al-Khayyal*et al.*, 2021).Compared to internet technologies, the adoption of mobile technologies has been relatively quick due to the mobility of the device and the abundance of mobile networks, which make M-banking more flexible (Chong *et al.,* 2012). When a customer connects to a bank via a mobile device such as a tablet, smart phone, or other mobile device, the engagement is referred to as mobile banking. Customers who use mobile devices to do various banking operations are supported by mobile banking, or M-banking. M-banking is the term used to describe banking activities carried out using mobile internet technology (Chong, 2013). Mobile payments involve using a mobile device to make modest purchases at the point of sale. Mobile banking has advantages over traditional branch-based banking and computer-based internet banking, including real freedom from time and location and increased transactional efficiency (Laukkanen, 2017). Banks provide their customers mobile banking services so they can maintain a competitive advantage and avoid the difficulties associated with offline banking. (Dineshwar and Steven, 2013).Location-based services, on-demand music, and videos purchasing of travel, accommodations, entertainment, and other services that are readily available via mobile handheld devices (Goyal *et al.* 2012)

M-banking originates in the 19thcentury, when the German business Paybox launched in collaboration with Deutsche Bank. In European nations including Spain, Germany, Austria, the United Kingdom, and Sweden, it was introduced and put to the test. M-Banking services were originally introduced in the 1990s in the United States (Kiri, 2020).Since that date, the change has taken off, and almost all types of banking services can now be performed through mobile applications. At least 7 million people had registered for the service by 2012.

The adoption of mobile banking is still in its early stages among users. Banks are promoting mobile banking on a variety of media channels in effort to reach the untapped market of potential consumers. The same is done via a variety of media platforms, including print, television, and internet-based media like social media. (Shankar et al, 2020; Shaoo and Pillai, 2017; Tam and Oliveira 2017; Tran and Croner, 2016). Thereby, in this study, we examine the perception of mobile banking usage.

2. Review of Literature

Sharma (2015) studied the trend toward electronic delivery of banking products and services is being driven in part by consumer demand and in part by an environment that is becoming more competitive on a global scale. Roshan Lal (2011) studied the relationship between the growth of IT advertising and e-banking in the banking sector. Today's banking industry operates in a highly liberalized, competitive, privatized, and globalized environment. Banks must be accustomed to IT in order to survive in this climate. Due to profound developments occurring in information technology, the Indian banking sector has experienced remarkable growth. N.Jamaluddin (2013) analyzed that information perception towards problems and prospects of E-Banking technology has significantly contributed to the development of the banking system. The banking industry's adoption of computerization has made it possible for Indian banking to reach every citizen. Information technology has not only made operations simpler but has also made it much more comfortable for those who do not have a strong background in IT but still need to access banking in the best way possible. Shukla and Shukla (2018) stated that using e-banking provides a higher level of convenience for handling accounts, even from a person's bedroom. It does, however, nevertheless pose threats to both financial security and personal privacy. Customers are encouraged not to reveal personal information with anyone, including bank personnel, who routinely update the passwords for online transactions, ATM PINs, and ATM logins. They should also make sure that the logged-in session is correctly signed out. According to Mishra (2012)if users are warned not to respond to any emails, phone calls, or other correspondence asking for their IB login credentials or password. They are also cautioned not to click on any links included in emails that purport to be links to the bank's website. Shrinivas (2016)observed if clients with security tips, such as often changing passwords, refraining from disclosing PIN through phone or mail, avoiding cyber cafes for net banking, etc. Uppul (2008) indicates that while most e-banking clients are happy with the various e-channels and their services, a lack of awareness is a significant barrier to the growth of e-banking services. The study offers several recommendations as well for future improvements to e-banking services.

3. Statement of Problem and Objective of the Study

The recent rapid expansion of banking is a result of the increased competition in financial services due to substantially reduced costs. M-banking encourages people to use the banking system, which helps them manage their finances better and feel more financially empowered. It brings money into bank accounts for financial institutions, which may then be converted into funds for lending and investing. It is discovered that e-adoption banking's and expansion are crucial for building a society that will have an impact on bringing economic growth, efficiency, and transparency. Convenience, dependability, accessibility, affordability, and the utility of services are all acknowledged as key growth factors for electronic banking from the standpoint of the customers. The existing literature reported that electronic delivery of banking products and services is being driven in part by consumer demand, Today’s banking industry operates in a highly liberalized, competitive, privatized, and globalized environment. The reviewed literature pointed out that banks must be accustomed to IT in order to survive in this climate. Another article has been defined that e-banking provides a higher level of convenience for handling accounts, even from a person's residence. Further pointed out that customers are encouraged not to reveal personal information with anyone, including bank personnel, update the passwords for online transactions, refraining from disclosing PIN through phone or mail. After studied the relevant literature, it has been found that most of the study are of foreign origin and very few studies are from India. Therefore, an attempt has been made here to assess the consumer perception towards mobile banking usages in Haryana’s districts.

The followings hypotheses have been formulated to assess the objective:

H_{01}= Consumers' perception towards mobile banking uses is not significantly different on the basis of Gender.
H_{02}= Consumers' perception towards mobile banking uses is not significantly different on the basis of age.
H_{03}= Consumers' perception towards mobile banking uses is not significantly different on the basis of area.
H_{04}= Consumers' perception towards mobile banking uses is not significantly different on the basis ofoccupation.

4. Research Methodology

The present work is a descriptive nature based on primary data. The primary data has been collected from two district of Haryana i.e., Hisar and Rohtak. Data is collected through semi-questionnaire and total 250 questionnaires were distributed among the respondents. At last, out of 250, only 229 considered for further analysis. The demographic details of 229 respondents have been shown in Table 1.

Table 1: Demographic profile of the respondents

Variable	Categories	Frequency	Percentage
Gender	Male	145	63.3
	Female	84	36.7
Age	Less than 30	126	55.0
	30 To 40	54	23.5
	41 and above	49	21.3
Area of living	Rural	115	50.2
	Urban	102	44.5
	Semi Urban	12	.05
Occupation	Student	138	60.2
	Business	17	.074
	PVT. Employee	35	15.2
	GOVT employee	39	17.0

Source: Primary data

The sample consists of 63.3 percent male and 36.7 percent female. In the sample of 229, 55.0 percent of respondents belong to the age group of less than 30 years, 23.5 percent respondents were 30-40 years of age and 21.3 percent respondents were 41 and above years of age.Based on area of living, 50.2 percent were living in rural areas, 44.5 percent were residing in urban areas and 0.5 percent were residing in semi-urban areas. Further, 60.2 percent respondents were student, .074 percent were businessmen, 15.2 percent were PVT employee and 17.0 percent Govt employees.

The study used a questionnaire consists of 10 simple statements on a five-point Likert scale ranging from strongly disagree to strongly agree to examine consumers' perception of mobile banking usage. The items are scored on a scale of 1 to 5, with 1 being strongly disagree and 5 being strongly agree. The collected data was analyzed with the help of t-test and One- Way ANOVA etc. The reliability coefficient Cronbach Alpha for the 10 items of the study has been noticed .0724.

Table 2: Items of the Questionnaire and their Mean value

Item No.	Item description	Mean
1	Mobile banking services are convenient way of banking	3.821
2	Providing of personal information create security concern to me	3.275
3	I hesitate to use mobile banking because other person may sometime access my account	2.860
4	I do not feel secure sending sensitive information on share with mobile banking platform	3.318

5	I am enough skilled in using mobile banking services	3.559
6	I am using mobile banking without any assistant	3.611
7	I would use the mobile banking services even if the system is changed	3.580
8	I feel confident after learning mobile banking operation	3.890
9	Mobile banking services enable me to accomplish my daily tasks quickly	3.965
10	I can access the banking services anytime and everywhere I go	3.986

Source: Primary data

It can be said based on mean score (as mean score >3) mentioned in table 2 that people are aware about cheque book ordering process, loan statements knowing process, account balance knowing process, procedure of fund transfer within and outside bank, bill payment process, ATM location and trace branch location through mobile banking.

5. Data Analysis and Results

5.1 consumers' perception on mobile banking usage on the basis of Gender

Table 3: Results of Independent t-test on the basis of Gender

Statements	Gender	Mean	Levene's Test		t-test for Equity of Mean					
			F	sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Null Hypotheses
1.Mobile banking services are convenient way of banking	Male	3.869	1.263	0.262	0.912	227	0.363	0.131	0.144	Accepted
	Female	3.738								
2. Providing of personal information create security concern to me	Male	3.324	0.009	0.925	818	227	0.414	0.134	0.163	Accepted
	Female	3.19								
3.I hesitate to use mobile banking because other person may sometime access my account	Male	2.966	1.679	0.196	1.817	227	0.071	0.287	0.158	Accepted
	Female	2.679								

4. I do not feel secure sending sensitive information on share with mobile banking platform	Male	3.476	1.056	0.305	0.862	227	0.389	0.428	0.497	Accepted
	Female	3.048								
5.I am enough skilled in using mobile banking services	Male	3.531	6.428	0.012	-0.545	199.712	0.587	-0.076	0.140	Accepted
	Female	3.607								
6. I am using mobile banking without any assistant	Male	3.738	9.645	0.002	2.296	146.038	0.023	0.345	0.150	Rejected
	Female	3.393								
7.I would use the mobile banking services even if the system is changed	Male	3.786	2.41	0.122	4.12	227	0	0.560	0.136	Rejected
	Female	3.226								
8.I feel confident after learning mobile banking operation	Male	3.897	1.045	0.308	0.122	227	0.903	0.016	0.128	Accepted
	Female	3.881								
9. Mobile banking services enable me to accomplish my daily tasks	Male	3.952	2.328	0.128	-0.12	227	0.905	-0.036	0.304	Accepted
	Female	3.988								

quickly										
10. I can access the banking services anytime and everywhere I go	Male	3.979	3.431	0.065	-0.147	227	0.883	-0.021	0.141	Accepted
	Female	4.00								

Note: At the 0.05 level, the mean difference is significant.
Source: Primary data

Table No. 3 describes the results of the Levene's Test and the Independent t-test. The results of Levene's Test for male and female respondents have been found insignificantly different for statement No. 1, 2, 3, 4, 7, 8, 9, and 10. Two statements i.e. I am enough skilled in using mobile banking services and I am using mobile banking without any assistant have been found significant. T-test result shows that there is significant difference in the Mean value of the male and female categories with regards to statement No. 6th and 7th because the p-value has been found less than 0.05.

In relation to statement (6) i.e. I am using mobile banking without any assistant has been found significant (t=2.296, P=.023). The mean value of male has been found high as compare to female group.it means that male group respondents are more agree about mobile banking usage without any assistant.

With regards to statement (7) i.e. I would use the mobile banking services even if the system is changed has been found significant different (t=4.12, P=.000). The mean value of male has been found high as compare to female group. It means those male groups respondents are more agree about usage of mobile banking services in future if system would change. However, male consumers are more aware about mobile banking than female consumers because their mean score has been found high as compare to female. Although in case of remaining statement No. 1, 2, 3, 4, 5, 8, 9 and 10 the hypotheses have been accepted because their p-values have been found more than .05. Consumers of male group presume that Mobile banking services are convenient way of banking can access anytime and everywhere, accomplish my daily tasks quickly but consumers have skill and confident for undisclosed sensitive information on mobile platform. Further consumers presume that there is no hesitate to use mobile banking because other person may sometime access my account.Therefore, hypothesis (H_{01}) has been accepted and it can be said that there is no significant different in perception of consumers on mobile banking usage on the basis of gender.

5.2 consumers' perception on mobile banking usage on the basis of Age

Table 4: Results of One-Way ANOVA on the basis on Age

	Mean score(AGE)						**ANOVA**		**Welch**		
Statements	**Less than 30**	**30 TO 40**	**40 AND above**	**Total**	**Levene Statistic**	**Sig.**	**F**	**Sig.**	**Statistic**	**Sig.**	**Null Hypotheses**
1.Mobile banking services are convenient way of	3.944	3.667	3.674	3.821	0.24	0.787	1.968	0.142	-	-	Accepted

banking											
2.Providing of personal information create security concern to me	3.318	3.333	3.102	3.275	0.522	0.594	0.659	0.518	-	-	Accepted
3.I hesitate to use mobile banking because other person may sometime access my account	2.794	2.815	3.082	2.860	5.299	0.006*	-	-	1.441	0.241	Accepted
4.I do not feel secure sending sensitive information on share with mobile banking platform	3.103	3.907	3.225	3.319	2.349	0.098	0.954	0.387	-	-	Accepted
5.I am enough skilled in using mobile banking services	3.659	3.685	3.163	3.559	0.435	0.648	4.412	0.013*	-	-	Rejected
6.I am using mobile banking without any assistant	3.667	3.648	3.429	3.611	1.125	0.326	0.954	0.387	-	-	Accepted

7.I would use the mobile banking services even if the system is changed	3.579	3.685	3.469	3.581	2.435	0.09	0.567	0.568	-	-	Accepted
8.I feel confident after learning mobile banking operation	4.008	3.667	3.837	3.891	2.904	0.057	2.675	0.071	-	-	Accepted
9.Mobile banking services enable me to accomplish my daily tasks quickly	4.206	3.741	3.592	3.965	0.403	0.669	1.736	0.179	-	-	Accepted
10.I can access the banking services anytime and everywhere I go	4.135	3.889	3.714	3.987	1.317	0.27	3.37	0.036*	-	-	Rejected

Note: At the 0.05 level, the mean difference is significant.
Sources: Primary data

Table No. 4 pointed out the results of the Levene's Test and One-Way ANOVA results. The results of Levene's Test for age groups respondents have been found insignificantly different for statement No. 1, 2, 4, 6 7, 8, 9, and 10. Only one statement i.e. I hesitate to use mobile banking because other person may sometime access my account has been found significant because the p-value has been found less than 0.05.

In case statement (5) i.e. I am enough skilled in using mobile banking services has been found significant (F=4.41, P=.013). The mean value of 30 to 40 age group has been found high as compare to other age group. It means those middle age group respondents are more agree about am enough skilled in using mobile banking services.With regards to statement (10) i.e. I can access the banking services anytime and everywhere I go has been confirmed homogeneity of variance across population sample but its associated ANOAV p- value has been found significant different (t=3.37, P=.036). The mean value of below 30 age group has been found high as compare to other age group. It means that low age group respondents are more agree about can access the banking services anytime and everywhere I go as compare to other age group.

In case of remaining statement No. 1, 2, 3, 4, 6, 7, 8 and 9 the hypotheses have been accepted because their corresponding p-values have been found more than .05. It means that consumers feel Mobile banking services are convenient way of banking and they have confident to use mobile banking without any assistant. Further, presume that they will use mobile banking even if the system is changed. Additionally, after learning mobile banking operation they quickly accomplish routine work quickly as per mean value >3. Further consumers presume that there is no hesitate to use mobile banking because other person may sometime access my account as average mean score <3.Hence, hypothesis (H_{02}) has been accepted and it can be said that there is no significant different in perception of consumers on mobile banking usage on the basis of age.

Table 5: Results of One-Way ANOVA the basis of Area

Statements	Mean score of Area				Levene Statistic	Sig.	ANOVA		Welch		Null Hypotheses
	Rural	Urban	Semi-urban	Total			F	Sig.	Statistic[a]	Sig.	
1.Mobile banking services are convenient way of banking	3.63	3.98	4.25	3.275	1.667	.191	4.123	.017*	-	-	Rejected
2.Providing of personal information create security concern to me	3.496	3.088	2.750	3.275	.733	.482	4.526	.012*	-	-	Rejected
3.I hesitate to use mobile banking because other person may sometime access my account	2.948	2.755	2.917	2.860	.768	.465	.764	.467	-	-	Accepted
4.I do not feel secure sending sensitive information on share with mobile banking platform	3.243	3.461	2.833	3.319	1.134	.323	.210	.811	-	-	Accepted
5.I am	3.496	3.618	3.667	3.559	4.356	.014	-	-	.435	.651	Accepted

enough skilled in using mobile banking services										
6.I am using mobile banking without any assistant	3.617	3.647	3.250	3.611	.520	.595	.773	.463	-	-	Accepted
7.I would use the mobile banking services even if the system is changed	3.661	3.569	2.917	3.581	2.821	.062	2.923	.056	-	-	Accepted
8.I feel confident after learning mobile banking operation	3.870	3.961	3.500	3.891	.131	.878	1.375	.255	-	-	Accepted
9.Mobile banking services enable me to accomplish my daily tasks quickly	4.017	3.980	3.333	3.965	.398	.672	.522	.594	-	-	Accepted
10.I can access the banking services anytime and everywhere I go	3.800	4.235	3.667	3.987	1.934	.147	5.735	.004*	-	-	Rejected

Note: At the 0.05 level, the mean difference is significant, Source: Primary data

Table No. 5 reported the results of the Levene's Test and One-Way ANOVA results. The results of Levene's Test for rural, urbanand semi urban respondents have been found insignificantly different for statement No. 1, 2, 3, 4, 6 7, 8, 9, and 10. Only one statement i.e. I am enough skilled in using mobile banking services has been found significant because the p-value has been found less than 0.05.

In case statement (1) i.e. I Mobile banking services are convenient way of banking has been found significant (F=4.123, P=.017). The mean value of semi urban has been found high as compare to other area. It means those semi urban groups respondents are more agree about mobile banking services are convenient way of banking.

With regards to statement (2) i.e., providing of personal information create security concern to me has been confirmed homogeneity of variance across population sample but its associated ANOVA, P- Value has been found significant different (t=4.526, P=.012). The mean value of rural has been found high as compare to other areas. It means those rural groups respondents are more agree about providing of personal information create security concern to me as compare to other areas.

With regards to statement (10) i.e. I can access the banking services anytime and everywhere I go has been confirmed homogeneity of variance across population sample but its associated ANOVA,P -Value has been found significant different (t=5.735, P=.004). The mean value of urban has been found high as compare to other areas. It means those urban area respondents are more agree about can access the banking services anytime and everywhere I go as compare to other areas.

In case of remaining statement No. 3, 4, 5, 6, 7, 8 and 9 the hypotheses have been accepted because their corresponding p-values have been found more than .05. it means that consumers have enough skill to use mobile banking without any assistant and even if the system is changed consumers will use mobile banking. Additionally, after learning mobile banking operation consumers feel confident to accomplish routine work quickly. Further consumers presume that there is no hesitate to use mobile banking because other person may sometime access my account.Therefore, hypothesis (H_{03}) has been accepted and it can be said that there is no significant different in perception of consumers on mobile banking usage on the basis of area.

Table 6: Results of One-Way ANOVA on the basis of occupation

statements	Mean score of Occupation					Levene Statistic	Sig	ANOVA		Welch		Null Hypotheses
	Student	Businessmen	PVT. Employee	GOVT Employee	Total			F	Sig.	Statistic	Sig.	
1.Mobile banking services are convenient way of banking	3.90	3.88	3.80	3.54	3.82	0.77	0.51	1.23	0.30	-	-	Accepted
2.Providing of personal information	3.39	2.71	3.09	3.28	3.28	0.27	0.85	2.05	0.11	-	-	Accepted

create security concern to me												
3.I hesitate to use mobile banking because other person may someti me access my account	2.81	3.12	2.80	2.97	2.86	1.12	0.34	0.52	0.67	-	-	Accepted
4.I do not feel secure sending sensitive information on share with mobile banking platform	3.08	3.12	3.14	4.41	3.32	2.84	0.04	-	-	0.34	0.80	Accepted
5. -I am enough skilled in using mobile banking services	3.65	3.59	3.69	3.10	3.56	1.20	0.31	2.96	0.03	-	-	Rejected
6.I am using mobile banking without any assistant	3.61	3.65	3.83	3.41	3.61	2.50	0.06	0.99	0.40	-	-	Accepted

7.I would use the mobile banking services even if the system is changed	3.54	3.29	3.86	3.59	3.58	2.52	0.06	1.36	0.26	-	-	Accepted
8.I feel confident after learning mobile banking operation	3.94	3.82	3.69	3.92	3.89	2.16	0.09	0.75	0.53	-	-	Accepted
9.Mobile banking services enable me to accomplish my daily tasks quickly	4.11	3.65	4.00	3.56	3.97	0.20	0.89	0.74	0.53	-	-	Accepted
10.I can access the banking services anytime and everywhere I go	4.10	3.82	4.03	3.62	3.99	0.45	0.72	2.50	0.03	-	-	Rejected

Note: At the 0.05 level, the mean difference is significant, Sources: Primary data

Table No. 6 pointed out the results of the Levene's Test and One-Way ANOVA results. The results of Levene's Test for age groups respondents have been found insignificantly different for statement No. 1, 2, 5, 6 7, 8, 9, and 10. Only one statement i.e. I do not feel secure sending sensitive information on share with mobile banking platform has been found significant because the p-value has been found less than 0.05.

In case statement (5) i.e. I am enough skilled in using mobile banking services has been found significant (F=2.96, P=.003). The mean value of private employees' occupation group has been found high as compare to another group. It means private employees group respondents are more agree about enough skill for use mobile banking services.
With regards to statement (10) i.e. I can access the banking services anytime and everywhere I go has been confirmed homogeneity of variance across population sample but its associated ANOVA, P-Value has been found significant different (t=2.50, P=.003). The mean value of students group has been found high as compare to other groups. It means that students group respondents are more agree about access the banking services anytime and everywhere I go as compare to other occupation group.In case of remaining statement No. 1, 2, 3, 4, 6, 7, 8 and 9 the hypotheses have been accepted because their corresponding p-values have been found more than .05. Consumers presume that mobile banking services are convenient way of banking and they have confident to use mobile banking without any assistant. Further, presume that they will use mobile banking even if the system is changed. Additionally, after learning mobile banking operation they quickly accomplish routine work quickly as per mean value >3. Further consumers presume that there is no hesitate to use mobile banking because other person may sometime access my account as average mean score <3.Therefore, hypothesis (H_{04}) has been accepted and it can be said that there is no significant different in perception of consumers on mobile banking usage on the basis of occupation.

6. Conclusion

Consumers' perception on mobile banking uses concluded that mobile banking servies uses without any assistant and these services would use in future even if the system is changed which has been suggested by male respondents. I am enough skilled in using mobile banking services has confirmed by middle age and student group respondents. Mobile banking services access from anytime everywhere has been confirmed by less than 30, urban and students' group.Mobile banking services are convenient way of banking has been suggested by semi urban and providing personal information create security concern for mobile banking user which has confirmed by rural area respondents.

7. Limitations and Future Research Directions

The purpose of this research work is understanding consumers' perception on mobile banking usage. This study is limited by sample size 229 in selected area of Haryana's districts i.e.hisar and rohtak due to a lack of time and funds. Another study can be conducted anywhere in India on same concept to know the perception on mobile banking usage.

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