

## **CHAPTER IV**

### **RESULTS AND DISCUSSION**

The major findings of the current study on “Adoption and Usage of Innovative Techniques: A Study on Mobile Banking in Coimbatore City” are discussed in this chapter under the following headings.

- 4.1. Frequency of usage of mobile banking
- 4.2. Socio economic and demographic background of the sample respondents
- 4.3. Banking details
- 4.4. Mobile Phone details
- 4.5. Views on mobile banking
- 4.6. Expectations on mobile banking
- 4.7. Usage of mobile phone
- 4.8. Problems in mobile banking usage
- 4.9. Adoption of mobile banking
- 4.10. Models on intention to adopt mobile banking
- 4.11. Perceived risk and intention to adopt mobile banking

#### **4.1. Frequency of usage of mobile banking**

The selected customers of the current study were divided based on the frequency of the usage of mobile banking. The distribution of the respondents based on their usage of mobile banking is given in Table-6

**TABLE-6**  
**FREQUENCY OF USAGE OF MOBILE BANKING**

<b>Frequency of usage of mobile banking</b>	<b>Number of respondents</b>	<b>percentage</b>
Daily	47	11.8
Once in a week	114	<b>28.5</b>
Twice in a month	112	28
Once in a month	94	23.5
Rarely	33	8.2
<b>Total</b>	<b>400</b>	<b>100</b>

Source: Field survey 2013

About 28.5 percent of the customers use mobile banking once in a week, closely followed by 28 percent using twice in a month.

#### **4.2 Socio economic and demographic background of the sample respondents**

This section studies the personal characteristics of the respondents under the following headings.

4.2.1 Gender

4.2.2 Age

4.2.3 Religion

4.2.4 Caste

4.2.5 Education

4.2.6 Marital status

4.2.7 Occupation

4.2.8 Monthly Income

The following tables 7 to 14 show the personal details of the sample units, viz., social, economic and demographic features which will help in finding out how these factors are related in the adoption of mobile banking. A survey conducted by Wan et

al., (2005) found that demographic background were strongly associated with adoption of all banking channels except ATM.

#### 4.2.1 Gender

The gender wise classification and frequency of usage of mobile banking of the sample respondents are given in the following Table-7.

**TABLE-7**  
**GENDER AND USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Gender		Total
		Male	Female	
Daily	N	31	16	47
	R	66	34	100
	C	12.9	10.1	11.8
Once in a week	N	74	40	114
	R	64.9	35	100
	C	<b>30.7</b>	<b>25.2</b>	28.5
Twice in a month	N	64	48	112
	R	57.1	42.9	100
	C	<b>26.6</b>	<b>30.2</b>	28.0
Once in a month	N	58	36	94
	R	61.7	38.3	100
	C	24.1	22.6	23.5
Rarely	N	14	19	33
	R	42.4	57.6	100
	C	5.8	11.9	8.2
Total	N	241	159	400
	R	<b>60.2</b>	<b>39.8</b>	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

Gender classification shows that 60 percent of the sample respondents are males and remaining 40 percent females. Among the males about 31 percent use mobile banking once in a week, followed by 27 percent twice in a month. In the case

of females, about 30 percent use mobile banking twice in a month and 25 percent once in a week. Among the sample respondents who use mobile banking daily, 66 percent are males and the remaining 34 percent females. The picture reveals the dominance of males in the usage of mobile banking. Concerning gender, studies have found a stronger proportion of perceived usefulness of mobile services among men than among women (Nysveen et al. 2005). The reason is men appear more task-oriented than women and electronic banking services are typically motivated by goal achievement (Cruz et al. 2010). Additionally, many empirical studies have revealed the statistical difference between female and male respondents in the mobile service/banking setting. For example, women perceive more risk in an online purchase than men do (Garbarino & Strahilevitz 2004). Peer opinions have a higher effect on females in mobile services (Nysveen et al. 2005). Men are more likely to use mobile banking than women are (Laukkanen & Pasanen 2008; Koenig-Lewis 2010), and men are more concerned on the cost of internet access and service fees than women are when using mobile banking services (Cruz et al. 2010). Percentage distribution of gender in the usage of mobile banking are shown in the following figure 11.

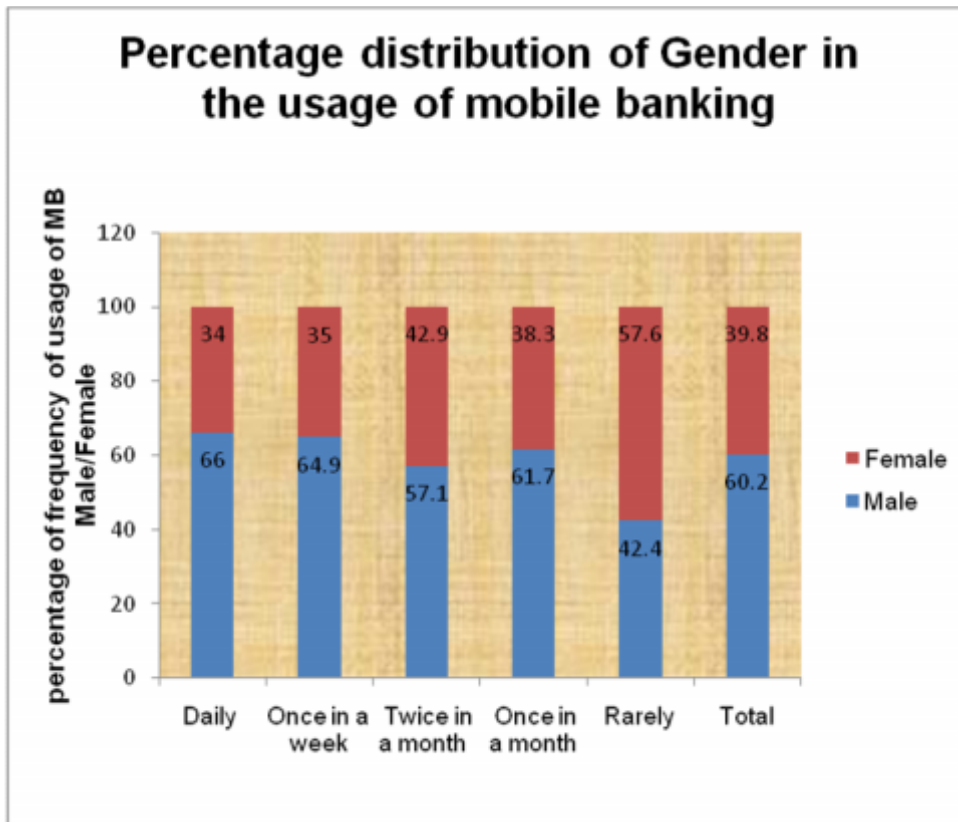


Fig-11

#### 4.2.2 Age

Age wise distribution of the collected data given in Table-8 shows that about 72 percent are aged between 21-30 years, about 19 percent are aged between 31-40 years and 4 percent are aged above 41 years. In the 21-30 age group about 29 percent use mobile banking once in a week, 28 percent twice in a month and another 24 percent once in a month. In the case of sample respondents who use mobile banking daily also, 68 percent are found to be in the age group of 21-30 years. Similar case is seen in the age of sample units who use mobile banking once in a week (74 percent), twice in a month (71 percent), once in a month (73 percent) or rarely (70 percent). In the mobile banking adoption literature, research studies indicated typical users of mobile banking are relatively young (Joshua & Koshy, 2011) and the studies further reported that the elderly had more resistance to change and negative attitude towards using mobile banking services (Laukkanen et al. 2007).

**TABLE-8**

**AGE AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Age (years)				Total
		less than 20	21-30	31-40	above 41	
Daily	N	4	32	10	1	47
	R	8.5	68.1	21.3	2.1	100
	C	19	11.1	13.3	5.9	11.8
Once in a week	N	7	84	17	6	114
	R	6.1	73.7	14.9	5.3	100
	C	33.3	<b>29.3</b>	22.7	35.3	28.5
Twice in a month	N	2	79	27	4	112
	R	1.8	70.5	24.1	3.6	100
	C	9.5	27.5	36	23.5	28
Once in a month	N	4	69	16	5	94
	R	4.3	73.4	17.0	5.3	100
	C	19	24	21.3	29.4	23.5
Rarely	N	4	23	5	1	33
	R	12.1	69.7	15.2	3.0	100
	C	19	8	6.7	5.9	8.2
Total	N	21	287	75	17	400
	R	5.25	<b>71.75</b>	18.75	4.25	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

**4.2.3 Religion**

Religion wise classification and frequency of usage of mobile banking of the sample respondents is given in Table-9.

**TABLE-9**

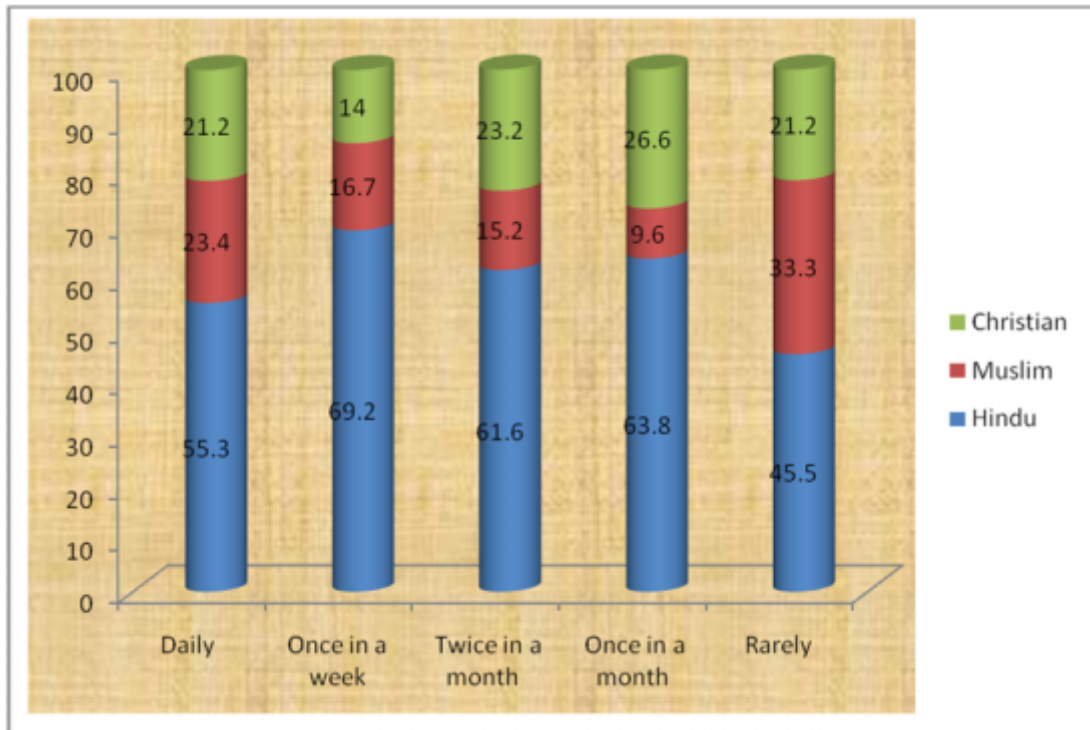
**RELIGION AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Religion			Total
		Hindu	Muslim	Christian	
Daily	N	26	11	10	47
	R	55.3	23.4	21.2	100
	C	10.4	16.4	11.9	11.8
Once in a week	N	79	19	16	114
	R	69.2	16.7	14.0	100
	C	<b>31.7</b>	<b>28.4</b>	19	<b>28.5</b>
Twice in a month	N	69	17	26	112
	R	61.6	15.2	23.2	100
	C	27.7	25.4	<b>31</b>	28
Once in a month	N	60	9	25	94
	R	63.8	9.6	26.6	100
	C	24.1	13.4	29.8	23.5
Rarely	N	15	11	7	33
	R	45.5	33.3	21.2	100
	C	6	16.4	8.3	8.2
Total	N	249	67	84	400
	R	<b>62.25</b>	16.75	21	100

Source: Field survey 2013, N- number stated , R- row percentage, C-column percentage.

Nearly 62 percent of the respondents are Hindus, 21 percent are Christians, and about 17 percent are Muslims. Among the Hindus, majority of 32 percent use mobile banking once in a week, followed by 28 percent twice in a month and 24 percent once in a month. The same trend prevails among Muslims also. While 28 percent of the Muslims use mobile banking once in a week, another 25 percent use it twice in a month. In the case of Christians a slight change is noticed in that while majority of 31 percent use mobile banking twice in a month and less than 30 percentages use it once in a month. Percentage distribution of religion in the usage of mobile banking is shown in the following figure-13

## RELIGION AND USAGE OF MOBILE BANKING



Frequency of usage of mobile banking

Fig-12

### 4.2.4 Community

The details on community wise classification and frequency of usage of mobile banking has been given in Table-10.

**TABLE-10**

**COMMUNITY AND USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Community				Total
		FC	BC	MBC	SC/ST	
Daily	N	7	32	6	2	47
	R	14.9	68.1	12.8	4.3	100
	C	9.3	15.5	6.5	7.7	11.8
Once in a week	N	24	62	20	8	114
	R	21.1	54.4	17.5	7	100
	C	32	<b>30.1</b>	21.5	30.8	28.5
Twice in a month	N	28	52	23	9	112
	R	25	46	20	8	100
	C	<b>37.3</b>	25.2	24.7	<b>34.6</b>	28
Once in a month	N	12	45	31	6	94
	R	12.8	47.9	33	6.4	100
	C	16	21.8	<b>33.3</b>	23.1	23.5
Rarely	N	4	15	13	1	33
	R	12.1	45.5	39.4	3	100
	C	5.3	7.3	14	3.8	8.2
Total	N	75	206	93	26	400
	R	18.8	<b>51.5</b>	23.2	6.5	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage, FC- Forward caste, MBC- Most Backward Caste, BC- Backward caste, SC-scheduled caste, ST-scheduled tribes.

Above Table-10 shows that among the total respondents 51 percent are from backward community, 23 percent are most backward community, about 19 percent are from forward community and 6 percent are from scheduled castes (SC) and scheduled tribes (ST). Majority of 30 percent of the backward community use mobile banking once in a week and 25 percent twice in a month. In the case of most backward community, 33 percent use mobile banking once in a month followed by 25 percent twice in a month. About 35 percent of the SC/ST use mobile banking twice in

a month. In the case of forward community, majority of 37 percent use mobile banking two times per month.

#### 4.2.5 Education

Education wise details of mobile banking users of the current study are depicted in the following Table-11.

**TABLE-11**

#### **EDUCATIONAL QUALIFICATION AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Education completed				Total
		HSC	UG	PG	Research scholar	
Daily	N	7	18	19	3	47
	R	14.9	38.3	40.4	6.4	100
	C	15.2	11	12.6	7.5	11.8
Once in a week	N	13	47	42	12	114
	R	11.4	41.2	36.8	10.5	100
	C	<b>28.3</b>	<b>28.8</b>	<b>27.8</b>	30	28.5
Twice in a month	N	11	45	41	15	112
	R	9.8	40.2	36.6	13.4	100
	C	23.9	27.6	27.2	<b>37.5</b>	28
Once in a month	N	10	37	38	9	94
	R	10.6	39.4	40.4	9.6	100
	C	21.7	22.7	25.2	22.5	23.5
Rarely	N	5	16	11	1	33
	R	15.2	48.5	33.3	3	100
	C	10.9	9.8	7.3	2.5	8.2
Total	N	46	163	151	40	400
	R	11.5	<b>40.8</b>	37.8	10	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage, HSC- higher secondary school, UG-under graduate, PG-post graduate.

The sample units have completed at least higher secondary school level education. Further 41 percent of the respondents had completed under graduation and 38 percent post graduation. The findings mirror the finding of earlier studies (Suoranta, 2003) in which it was found that the mobile banking users have completed at least intermediate education. Among the respondents who had completed higher secondary level education, a majority of 29 percent use mobile banking once in a week, about 24 percent use mobile banking twice in a month. In the case of under graduates majority of 29 percent use mobile banking once in a week, followed by 28 percent twice in a month. In the case of post graduates while 28 percent use mobile banking once in week, 27 percent use it twice in a month and 25 percent use mobile banking once in a month. About 38 percent of the research scholars use mobile banking twice in a month, followed by 30 percent once in a week and another 23 percent once in a month.

#### **4.2.6 Marital status**

The following Table-12 gives the details on marital status and frequency of usage of mobile banking of the respondents.

**TABLE-12****MARITAL STATUS AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Marital status		Total
		Single	Married	
Daily	N	25	22	47
	R	10.6	13.3	11.8
	C	10.6	13.3	11.8
Once in a week	N	61	53	114
	R	26	32	28.5
	C	26	<b>32.1</b>	28.5
Twice in a month	N	62	50	112
	R	26.4	30.3	28
	C	26.4	30.3	28
Once in a month	N	64	30	94
	R	27.2	18.2	23.5
	C	<b>27.2</b>	18.2	23.5
Rarely	N	23	10	33
	R	9.8	6.1	8.2
	C	9.8	6.1	8.2
Total	N	235	165	400
	R	<b>58.7</b>	41.3	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The above Table-12 shows that about 59 percent of the respondents are unmarried and the remaining 41 percent are married. Majority of 32 percent of the married respondents are using mobile banking weekly once, followed by 30 percent twice in a month. In the case of unmarried, majority of 27 percent use mobile banking once in a month followed by an almost equal percentage of 26 percent use either once in a week or twice in a month. Suoranta (2003) also reported that many of the mobile banking users are married.

#### 4.2.7 Occupation

Occupation wise details of mobile banking users of the current study are depicted in the following Table-13.

**TABLE-13**

**OCCUPATION AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Occupation					Others		Total
		Business	Professionals	Sales executives	Teachers	Other Jobs	Students	Home maker	
Daily	N	13	8	6	5	1	10	4	47
	R	27.7	17	12.8	10.6	2.1	21.3	8.5	100
	C	17.3	6.3	13.3	13.9	5.9	13.7	14.8	11.8
Once in week	N	14	43	12	12	6	19	8	114
	R	12.3	37.7	10.5	10.5	5.3	16.7	7	100
	C	18.7	<b>33.9</b>	26.7	33.3	35.3	26	29.6	28.5
Twice in a month	N	21	41	15	11	4	15	5	112
	R	18.8	36.6	13.4	9.8	3.6	13.4	4.5	100.
	C	28	32.3	33.3	30.6	23.5	20.5	18.5	28
Once in a month	N	21	30	11	8	2	16	6	94
	R	22.3	31.9	11.7	8.5	2.1	17	6.4	100
	C	28	23.6	24.4	22.2	11.8	21.9	22.2	23.5
Rarely	N	6	5	1	0	4	13	4	33
	R	18.2	15.2	3	0	12.1	39.4	12.1	100
	C C	8	3.9	2.2	0	23.5	17.8	14.8	8.2
Total	N	75	127	45	36	17	73	27	400
	R R	18.8	<b>31.8</b>	11.2	9	4.2	18.2	6.8	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

In the above Table-13 occupation analysis reveals that 18 percent are not in labour force being students and 7 percents are home maker. Among the total respondents, 32 respondents are professionals (engineers, doctors, lawyers and bank employees), 19 percent are in business and about 11 percent are working as sales executives. Majority of 34 percent of the professionals are using mobile banking once in a week and 32 percent twice in a month. Professional people use mobile banking services in a larger proportion. In the study of Hamza salim et.al, (2011) it was reported that 25 percent of the respondents of mobile banking users

are in business and in the current study about 19 percent of respondents are in business.

#### **4.2.8 Monthly income:**

Sulaiman et al. (2007) has highlighted relationship of income on the adoption level in Malaysia. He stated that 89.7 percent of the respondents who earned between RM5000/1650\$ to RM7000/2300\$ monthly, were using mobile banking. Adoption of mobile banking is widespread amongst high-income earners. The income classification and frequency of usage of mobile banking usage of the sample respondents is given in the following Table-14

**TABLE-14**  
**MONTHLY INCOME AND FREQUENCY OF USAGE OF MOBILE BANKING**

Monthly income (Rs) Usage of Mobile Banking		Nil	< 5000	5001-15000	15001-25000	25001-35000	35001-45000	45001-55000	>55001	Total
		Daily	N	14	2	12	8	11	0	0
R	29.8		4.3	25.5	17	23.4	0	0	0	100
C	14		<b>66.7</b>	7.9	13.3	15.7	0	0	0	11.8
Once in a Week	N	28	1	40	15	23	0	2	5	114
	R	24.6	9	35.1	13.2	20.2	0	1.8	4.4	100
	C	28	33.3	26.3	25	32.9	0	<b>66.7</b>	55.6	<b>28.5</b>
Twice in a month	N	20	0	49	20	17	3	1	2	112
	R	17.9	0	43.8	17.9	15.2	2.7	9	1.8	100
	C	20	0	32.2	33.3	24.3	100	33.3	22.2	28
Once in a month	N	21	0	41	14	16	0	0	2	94
	R	22.3	0	43.6	14.9	17	0	0	2.1	100
	C	21	0	27	23.3	22.9	0	0	22.2	23.5
Rarely	N	17	0	10	3	3	0	0	0	33
	R	51.5	0	30.3	9.1	9.1	0	0	0	100
	C	17	0	6.6	5	4.3	0	0	0	8.2
Total	N	100	3	152	60	70	3	3	9	400
	R	25	0.8	<b>38</b>	15	17.5	0.8	0.8	2.2	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The above Table-14 shows that 25 percent of the sample respondents are not working being either home maker or students. Thirty eight percent of the respondents have their monthly income in the range of Rs 5001-15000, 15 percent in the range of 15001-25000 and about 21 percent have their monthly income exceeding Rs 25000. In the range of less than Rs5000 income group majority of about 67 percent use mobile banking daily and 33 percent use mobile banking once in a week. In the case

of Rs.45001-Rs. 55000 income group about 67 percent use mobile banking once in a week and 33 percent use mobile banking twice in a month.

**The analysis reveals that sample respondents who use mobile banking are mostly males in the age group of 21-30 years, hailing from Hindu backward community families. Further they have completed at least higher secondary level of education and are unmarried and work as professionals.**

To test whether the frequency of usage of mobile banking by the sample units depends on their socio economic and demographic characteristics  $\chi^2$  test was employed. The null hypothesis tested was

Ho: Frequency of usage of mobile banking is independent of gender/age/religion/community/educational level/marital status/occupation and income of the respondents.

The alternative hypothesis was

Ha: Frequency of usage of mobile banking depends on the above stated characteristics. To test the hypotheses,  $\chi^2$  test was performed using SPSS 16.0 programme. The obtained results are shown in Table-15.

**TABLE-15**

**RELATIONSHIP BETWEEN SELECTED CHARACTERISTICS AND FREQUENCY OF USAGE OF MOBILE BANKING-  $\chi^2$  TEST**

<b>Characteristics</b>	<b>Calculated <math>\chi^2</math> value</b>	<b>Degree of freedom</b>	<b>Table <math>\chi^2_{0.05}</math> value</b>	<b>Inference Ho</b>
Gender	6.587	4	9.488	Accepted
Age	11.465	12	21.026	Accepted
Religion	16.827	8	15.507	Rejected
Community	22.455	12	21.026	Rejected
Marital status	7.435	4	9.488	Accepted
Education	5.860	12	21.026	Accepted
Occupation	38.721	24	36.415	Rejected
Monthly Income	45.901	28	41.337	Rejected

Source: Calculated based on field survey, 2013

The calculated  $\chi^2$  values were compared with the theoretical values of  $\chi^2$  at 0.05 level for given degrees of freedom. From the results, it was inferred that, the frequency of usage of mobile banking depends on religion, community, occupation and monthly income of the respondents and independent on gender, age, marital status and educational level. The results also are consistent with the study conducted by Karjaluoto et al. (2002) who claimed that socio-demographic elements such as gender, age, marital status, education, income level and profession as noted earlier are significant at 0.001 level.

### **4.3 Banking details**

A survey conducted by Brimpong (2008) found that banking industry is characterized by a high level of competition. In order to gain competitive advantage, it is therefore useful for banks to make sure that customers are highly satisfied. Moreover, it has also been shown that having loyal customers contribute to guarantee long term growth for the bank. This section analyses the banking details of the respondents under the following headings.

4.3.1 Period of having bank account

4.3.2 Type of bank

4.3.3 Distance of the bank

4.3.4 Role of banks on mobile banking

4.3.5 Sources of awareness on mobile banking

#### **4.3.1 Period of having bank account**

The period of having accounts in banks by the respondents of the current study is given in Table-16.

**TABLE-16**

**YEARS OF HAVING BANK ACCOUNT AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Years				Total
		1-5 yrs	5-10 yrs	10-15 yrs	above 15 yrs	
Daily	N	39	4	1	3	47
	R	83	8.5	2.1	6.4	100
	C	12.9	5.2	6.2	60	11.8
Once in a week	N	83	28	3	0	114
	R	72.8	24.6	2.6	0	100
	C	<b>27.5</b>	36.4	18.8	0	28.5
Twice in a month	N	75	29	7	1	112
	R	67	25.9	6.2	.9	100
	C	24.8	37.7	43.8	20	28
Once in a month	N	78	13	2	1	94
	R	83	13.8	2.1	1.1	100
	C	25.8	16.9	12.5	20	23.5
Rarely	N	27	3	3	0	33
	R	81.8	9.1	9.1	0	100
	C	8.9	3.9	18.8	0	8.2
Total	N	302	77	16	5	400
	R	<b>75.5</b>	19.2	4	1.2	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

In the current sample, about 76 percent of the respondents have their bank accounts for the past five years only. Among those who have bank accounts within the past five years, 27.5 percent use mobile banking once in a week, 25.8 percent once in a month and 24.8 percent twice in a month.

**4.3.2 Type of bank**

Vitalanalytic (2009) reported that private and foreign banks use mobile banking service more frequently than their counterparts in public sector banks. The author stated that checking accounts balance was the most popular mobile banking

service used by urban customers with almost 40 million users. It was followed by checking last three transactions performed and knowing cheque clearing status. The following Table-17 gives the type of bank in which the current sample units have their accounts.

**TABLE- 17**

**TYPE OF THE BANK AND FREQUENCY  
OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Type of the Bank													Total
		Public sector banks						Private sector banks							
		SBI	IOB	IB	SB	PNB	Total	ICICI	HDFC	KVB	CUB	LVB	AXIS	Total	
Daily	N	24	0	0	1	0	25	7	9	3	0	3	0	22	47
	R	51.1	0	0	2.1	0	53.2	14.9	19.1	6.4	0	6.4	0	46.8	100
	C	13.5	0	0	10	0	23.5	9.7	20	7.1	0	33.3	0	70.1	11.8
Once in a week	N	52	5	2	1	0	60	24	5	16	6	3	0	54	114
	R	45.6	4.4	1.8	.9	0	52.7	21.1	4.4	14	5.3	2.6	0	47.4	100
	C	<b>29.2</b>	33.3	28.6	10	0	101.1	33.3	11.1	38.1	37.5	33.3	0	153.3	28.5
Twice in a month	N	46	4	2	4	1	57	13	19	10	9	1	3	55	112
	R	41.1	3.6	1.8	3.6	0.9	51	11.6	17	8.9	8	.9	2.7	49.1	100
	C	25.8	26.7	28.6	40	50	171.1	18.1	42.2	23.8	56.2	11.1	75	226.4	28
Once in a month	N	37	5	3	3	0	48	25	11	7	1	2	0	46	94
	R	39.4	5.3	3.2	3.2	0	51.1	26.6	11.7	7.4	1.1	2.1	0	48.9	100
	C	20.8	33.3	42.9	30	0	127	<b>34.7</b>	24.4	16.7	6.2	22.2	0	104.2	23.5
Rarely	N	19	1	0	1	1	22	3	1	6	0	0	1	11	33
	R	57.6	3	0	3	3	66.6	9.1	3	18.2	0	0	3	33.3	100
	C	10.7	6.7	0	10	50	77.4	4.2	2.2	14.3	0	0	25	45.7	8.2
Total	N	178	15	7	10	2	212	72	45	42	16	9	4	188	400
	R	<b>44.5</b>	3.8	1.8	2.5	.50	<b>53.1</b>	18	11.2	10.5	4	2.2	1	46.9	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage,  
SBI- State Bank of India, IOB-Indian Overseas Bank, IB- Indian Bank, SB - Syndicate Bank, PNB-Punjab National Bank, ICICI- Industrial Credit and Investment Corporation of India Bank, HDFC- Housing Development Finance Corporation, KVB-Karur Vaisya Bank, CUB-City Union Bank, LVB- Lakshmi Vilas Bank.

In the current study the sample units have their accounts mostly in public sector banks. Among the 53 percentage of the respondents who use mobile banking services through public sector banks, 44.5 percent have their mobile banking operation being carried out through the State Bank of India. Among the private sector banks, in the current study, ICICI tops the list with 18 percentage, followed by HDFC (11.2 percent) and KVB (10.52 percent). The findings are in tune with the work of Prerna Sharma and Preethi (2011) in which 88 percent of the mobile bank users have their accounts in public sector banks. In the study it was found that among the customers who have account in the State Bank of India, about 29.2 percent use mobile banking once in a week. In the case of ICICI bank accounters, 34.7 percent use mobile banking once in a month, closely followed by 33.3 percent using mobile banking once in a week. The findings were similar to the findings of Vishal Goyal et al., (2012) in which the authors have reported that State Bank of India was the largest mobile banking service provider and among private banks ICICI Bank was leading in mobile banking services.

#### **4.3.3 Distance of the bank**

The following Table-18 gives the distance of the bank from the place of residence of respondents in kilometer and frequency of their usage of mobile banking.

**TABLE-18**

**DISTANCE OF THE BANK (in Km) AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking	Distance	Total
--------------------------------------	----------	-------

		less than 5 Km	5-10 Km	11-15 Km	16-20 Km	above 20 Km	
Daily	N	18	21	7	0	1	47
	R	38.3	44.7	14.9	0	2.1	100
	C	11.4	12.8	12.7	0	25	11.8
Once in a week	N	44	55	11	1	3	114
	R	38.6	48.2	9.6	.9	2.6	100
	C	27.8	<b>33.5</b>	20	5.3	75	28.5
Twice in a month	N	47	44	13	8	0	112
	R	42	39.3	11.6	7.1	0	100
	C	<b>29.7</b>	26.8	23.6	<b>42.1</b>	0	28
Once in a month	N	36	31	20	7	0	94
	R	38.3	33	21.3	7.4	0	100
	C	22.8	18.9	36.4	36.8	0	23.5
Rarely	N	13	13	4	3	0	33
	R	39.4	39.4	12.1	9.1	0	100
	C	8.2	7.9	7.3	15.8	0	8.2
Total	N	158	164	55	19	4	400
	R	39.5	<b>41</b>	13.8	4.8	1	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The above Table-18 shows that of the total respondents majority of 41 percent travel 5 to 10 kilometers to reach the bank from their residence and 39.5 percent travel less than five kilometers. Among the customers who have to travel 5 to 10 kilometers to reach the bank, majority of 33.5 percent use mobile banking once in a week. For the customers whose banks were at a distance of 16-20 kilometers, 42.1 percent use mobile banking twice in a month. Even among those for whom the banks were within 5 kilometers distance, majority (29.7 percent) use mobile banking twice in a month.

#### 4.3.4 Role of banks on mobile banking

An attempt was made in this section to obtain the views of the customers on what should be the role of banks in promoting mobile banking among its customers. The respondents of the current study were asked to express their views in a five point rating scale as either strongly agree/'agree/'neutral/disagree/strongly disagree for four statements relating to banks role. Scores were assigned as '2' for 'strongly agree'; '1' for

'agree'; '0' for 'neutral'; '-1' for 'disagree' and '-2' for 'strongly disagree'. The average scores were calculated based on the responses and ranks were assigned, which are given in Table-19.

**TABLE- 19**  
**ROLE OF BANKS ON MOBILE BANKING**

S .No	Role of banks	Average score	Rank	Percentage position	Garrett's score
1	To be fair in customer service policies following transactions	1.23	1	12.5	73
2	To provide the needed information on mobile banking	1.2	2	37.5	56
3	To have access to the information needed to handle transactions appropriately	1.1	3	62.5	43
4	To be open and receptive to customer needs	1.095	4	87.5	28

Source: calculations based on field survey data 2013

From the table it is clear that the respondents' agree' that the banks have to (i) 'be fair in customer service policies following transactions', (ii) 'provide the needed information on mobile banking', (iii) 'have access to the information needed to handle transactions appropriately', and (iv) 'be open and receptive to customer needs', the average scores assigned being nearer to '1'. Based on the scores, ranks were assigned. For the obtained ranks Garrette's score was obtained by using the following procedure. To get Garrett score first the percent position was obtained using the formula

$$\text{Percentage Position} = \frac{100 (R_{ij} - 0.5)}{N_j}$$

where  $R_i$  = Rank given the for  $i^{\text{th}}$  variable,  $N_j$  = Number of variables ranked by the respondents.

From the calculated percent position, Garrett scores were obtained from Garrett Ranking Conversion Table. The obtained Garrett scores are given in the above table.

The sample respondents of the current research work gave the maximum score of '73' for banks to 'be fair in customer service policies following a transaction' and a minimum score of '28' for banks to ' be open and receptive to customer needs'

#### 4.3.5 Sources of awareness on mobile banking

Table-20 gives the source from which the sample units become aware of mobile banking.

**TABLE-20**

**SOURCE OF AWARENESS ON MOBILE BANKING AND USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Source of awareness					Total
		Friends	Relatives	Banks	Advertisement	others	
Daily	N	15	5	14	8	5	47
	R	31.9	10.6	29.8	17	10.6	100
	C	10.9	6.9	11.8	12.7	<b>55.6</b>	11.8
Once in a week	N	32	24	47	11	0	114
	R	28.1	21.1	41.2	9.6	0	100
	C	23.4	<b>33.3</b>	<b>39.5</b>	17.5	0	28.5
Twice in a month	N	44	16	30	18	4	112
	R	39.3	14.3	26.8	16.1	3.6	100
	C	<b>32.1</b>	22.2	25.2	28.6	44.4	28
Once in a month	N	30	18	22	24	0	94

	R	31.9	19.1	23.4	25.5	0	100
	C	21.9	25	18.5	<b>38.1</b>	0	23.5
Rarely	N	16	9	6	2	0	33
	R	48.5	27.3	18.2	6.1	0	100
	C	11.7	12.5	5	3.2	0	8.2
Total	N	137	72	119	63	9	400
	R	<b>34.2</b>	18	29.8	15.8	2.2	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

It is inferred that majority of 34 percent become aware of mobile banking through friends, 30 percent through banks, 18 percent through relatives, 16 percent from advertisement and only 2 percent through self interest. Among the majority of the customers who become aware of mobile banking usage through friends, majority of 32 percent use mobile banking twice in a month. For the sample respondents who become aware of mobile banking through relatives and banks, 33.3 and 39.5 percent use mobile banking once in a week respectively.

**The analysis reveals that majority of 76 percent of the sample respondents, have their bank accounts since the past five years and mostly in public sector banks. State Bank of India has the highest number of mobile banking customers, of which 29.2 percent use mobile banking once in a week. ICICI, the private sector bank has the maximum number of mobile banking customers; of whom majority of 34.7 percent use mobile banking once in a month. For majority of 80 percent, the banks are within 10km from their place of residence. Irrespective of the distance of the bank, about 25 percent of the respondents use mobile banking. Mostly the customers are aware of mobile banking through friends. In this 32.5 percent use mobile banking twice in a month.**

#### 4.4 Mobile phone details

The Indian mobile ecosystems have passed through various phases and have faced enormous challenges to make its way out. With simple and costly phones to today's highly interactive and relatively cheap smart phones, India's mobile services market would reach Rs 1.2 lakh crore in 2013, up 8 percent from 2012 revenue of Rs 1.1 lakh crore, according to Gartner. India's Mobile connection was

886.3 million in 2013, an 11 percent increase from 712 million connections in 2012. According to the Master Card Mobile Payments Readiness Index (MPRI), India ranked 21st among 34 countries with the score of 31.4 on a scale of 100. The index also points out that only 14 per cent of Indian consumers are familiar with both peer to peer (P2P) and m-commerce transactions, and 10 per cent are familiar with point of sale (POS) transactions. However, with mobile phone penetration of over 80 per cent, India has huge potential for mobile banking. This section analyses the details of the respondents' mobile phones, under the following headings.

#### 4.4.1 Mobile operating system

#### 4.4.2 Brand holding

#### 4.4.3 Mobile network

#### 4.4.4 Period of usage of mobile banking

### **4.4.1 Mobile operating system:**

Mobile operating system is specifically designed to run on mobile devices such as mobile phones, smart phones, PDA's, tablet computers and other hand held devices. The sample units of the current study use mobile phones<sup>1</sup> and smart phones<sup>2</sup> as their mobile operating system, the details of which are given in Table-21

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<sup>1</sup> An electronic telecommunications device, often referred to as a cellular phone or cell phone. Mobile phones connect to a wireless communications network through radio wave or satellite transmissions. Most mobile phones provide voice communications, Short Message Service (SMS), Multimedia Message Service (MMS), and newer phones may also provide Internet services such as Web browsing and e-mail.

<sup>2</sup> Smart phones are a handheld device that integrates mobile phone capabilities with the more common features of a handheld computer or PDA. Smart phones allow users to store information, e-mail, and install programs, along with using a mobile phone in one device. For example a Smartphone could be a mobile phone with some PDA functions integrated into the device, or vice versa

**TABLE-21**  
**MOBILE OPERATING SYSTEM**

Frequency of usage of Mobile banking		Mobile operating system		Total
		Mobile phone	Smartphone	
Daily	N	9	38	47
	R	19.1	80.9	100
	C	6	15.2	11.8
Once in a week	N	20	94	114
	R	17.5	82.5	100
	C	13.3	<b>37.6</b>	28.5
Twice in a month	N	58	54	112
	R	51.8	48.2	100
	C	<b>38.7</b>	21.6	28
Once in a month	N	42	52	94
	R	44.7	55.3	100
	C	28	20.8	23.5
Rarely	N	21	12	33
	R	63.6	36.4	100
	C	14	4.8	8.2
Total	N	150	250	400
	R	37.5	<b>62.5</b>	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

It can be inferred from Table-21 that majority of 63 percent own smart mobile phone (Android, Windows phone, i phone OS) and the remaining 37 percent own

mobile phone hand set. Among the respondents who use mobile phones; majority of 38.7 percent use mobile banking twice in a month. In the case of smart phone holders, majority of 37.6 percent use mobile banking once in a week.

#### 4.4.2 Brand holding

The following Table-22 gives the brand holding of mobile handset owned by the sample respondents.

**TABLE-22**

**MOBILE BRAND AND FREQUENCY OF USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Mobile brand				Total
		Samsung	Nokia	Sony xperia	Others	
Daily	N	21	24	2	0	47
	R	44.7	51.1	4.3	0	100
	C	9.3	21.6	5.1	0	11.8
Once in a week	N	67	31	10	6	114
	R	58.8	27.2	8.8	5.3	100
	C	29.6	<b>27.9</b>	25.6	25	28.5
Twice in a month	N	70	28	9	5	112
	R	62.5	25	8	4.5	100
	C	<b>31</b>	25.2	23.1	20.8	28
Once in a month	N	53	18	11	12	94
	R	56.4	19.1	11.7	12.8	100
	C	23.5	16.2	28.2	50	23.5
Rarely	N	15	10	7	1	33
	R	45.5	30.3	21.2	3	100
	C	6.6	9	17.9	4.2	8.2
Total	N	226	111	39	24	400
	R	<b>56.5</b>	27.8	9.8	6	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The above Table-22 shows that majority of 57 percent own Samsung brand handset, 28 percent Nokia brand hand set and 10 percent own Sony xperia. The analysis reveals that Samsung brand is the most favourite mobile among the public

followed by Nokia and Sony xperia handset. Among those who have Samsung; majority of 31 percent use mobile banking twice in a month. In the case of Nokia holders; 27.9 percent use mobile banking once in a week.

#### 4.4.3 Mobile Network

The following Table-23 gives the types of network used by the respondents.

**TABLE-23**  
**MOBILE NETWORK AND USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Mobile Network						Total
		Airtel	Aircel	Reliance	BSNL	Docomo	Others	
Daily	N	9	14	11	10	0	3	47
	R	19.1	29.8	23.4	21.3	0	6.4	100
	C	6.6	12.2	14.1	40	0	42.9	11.8
Once in a week	N	45	43	11	7	8	0	114
	R	39.5	37.7	9.6	6.1	7	0	100
	C	<b>32.8</b>	<b>37.4</b>	14.1	<b>28</b>	21.1	0	28.5
Twice in a month	N	42	31	28	1	9	1	112
	R	37.5	27.7	25	9	8	9	100
	C	30.7	27	<b>35.9</b>	4	23.7	14.3	28
Once in a month	N	31	18	22	5	18	0	94
	R	33	19	23.4	5.3	19.1	0	100
	C	22.6	15.7	28.2	20	<b>47.4</b>	0	23.5
Rarely	N	10	9	6	2	3	3	33
	R	30.3	27.3	18.2	6.1	9.1	9.1	100
	C	7.3	7.8	7.7	8	7.9	42.9	8.2
Total	N	137	115	78	25	38	7	400
	R	<b>34.2</b>	28.8	19.5	6.2	9.5	1.8	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The above Table-23 shows that majority of 34 percent of the respondents prefer Airtel network, 29 percent Aircel network, followed by 20 percent Reliance network. Among those who use Airtel, Aircel, BSNL networks, 32.8, 37.4 and 28 percent

respectively use mobile banking once in a week. Out of those who use reliance network, majority of 35.9 percent use mobile banking twice in a month. Out of those who use docomo network, 47.4 percent use mobile banking once in a month only.

#### 4.4.4 Period of usage of mobile banking

The respondents were asked to state the period from which they started using mobile banking. The details are given in the following Table-24.

**TABLE-24**

**PERIOD OF USING MOBILE BANKING AND USAGE OF MOBILE BANKING**

Frequency of usage of Mobile banking		Start using MB				Total
		Less than 6 months	6mnths-1yr	1yr-2yrs	More than 2yrs	
Daily	N	12	12	4	19	47
	R	25.5	25.5	8.5	40.4	100
	C	8.8	10.8	5.6	23.8	11.8
Once in a week	N	25	38	28	23	114
	R	21.9	33.3	24.6	20.2	100
	C	18.2	<b>34.2</b>	<b>38.9</b>	<b>28.8</b>	28.5
Twice in a month	N	35	36	22	19	112
	R	31.2	32.1	19.6	17	100
	C	25.5	32.4	30.6	23.8	28
Once in a month	N	39	22	18	15	94
	R	41.5	23.4	19.1	16	100
	C	<b>28.5</b>	19.8	25	18.8	23.5
Rarely	N	26	3	0	4	33
	R	78.8	9.1	0	12.1	100
	C	19	2.7	0	5	8.2
Total	N	137	111	72	80	400
	R	<b>34.2</b>	27.8	18	20	100

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The above Table-24 reveals that majority of 34 percent of the respondents started using mobile banking for the past six months only, 28 percent use mobile

banking for a period ranging 6 months to one year and 20 percent use mobile banking for more than two years. Among those who use mobile banking in the last six months only, majority of 28.5 percent use it once in a month. For those who use it for the past 6 months to one year; 34.2 percent use it once in a week. In the case of customers who use mobile banking for 1 to 2 years and for more than 2 years majority of 38.9 and 28.8 percent are using it once in a week respectively. It mirrors the findings of Vishal Goyal (2012) in which majority of 81.81 percent of sample units were using mobile banking services for less than 2 years and frequency of usage among majority (45.45%) of users was weekly.

**The analysis reveals that among the sample respondents, majority of the respondents own Samsung smart phone followed by Nokia and most of them prefer Airtel network and they started using mobile banking for the past six months.**

**\* While majority of Samsung mobile phones holders use mobile banking twice in a month; Nokia holders mostly use it once in a week.**

**\* Majority of the sample units who have Airtel, Aircel and BSNL networks, use mobile banking once in a week.**

**\* Majority of the respondents of the current research study use mobile banks in the last six months only. They use it mostly once in a month.**

#### **4.5 Views on mobile banking:**

Sadi and Noordin (2011) stated that facilitating condition is an important attribute of consumer behavioural control towards intention to use mobile banking; therefore it is necessary to improve the facilitating conditions of banking application services like connection speed, secure systems and easy transaction method.

The respondents of the current research work were asked to express their views on mobile banking in a five point rating scale as 'strongly agree', 'agree', 'neutral', 'disagree', and 'strongly disagree'. Six statements to elicit the views were given and the scores were given from '2' to '-2' respectively. Table-25 below gives the average scores given by the sample units on how they view the mobile banking.

**TABLE-25****VIEWS ON MOBILE BANKING- SCORES ASSIGNED**

<b>Frequency of usage of mobile banking</b>	<b>Daily</b>	<b>once in a week</b>	<b>Twice in a month</b>	<b>Once in a month</b>	<b>Rarely</b>	<b>All</b>
<b>Views</b>						
MB is easy to learn	0.8936	1.0701	0.9910	0.8191	0.8181	0.9475
MB is reliable	0.8936	0.9035	0.9910	0.7659	0.5151	0.8625
MB completes banking tasks more quickly	0.78723	0.84211	0.8125	0.5744	0.6363	0.7475
MB is reasonably priced	0.7234	1.01754	0.9285	0.6914	0.4848	0.8375
MB services are available everywhere	0.8723	0.9298	0.875	0.7234	0.5757	0.83
MB services are available 24 hrs/day	0.7021	0.9736	0.8660	0.7659	0.7575	0.845

Source: Estimated based on field survey, 2013

The scores assigned on views on mobile banking being closer to 'one' implies that all the respondents of the current study 'agree' that mobile banking is (i) easy to learn, (ii) reliable, (iii) completes banking tasks more quickly, (iv) reasonably priced (v) available everywhere and (vi) mobile banking services are available 24hrs/day.

#### **4.6 Expectations on mobile banking**

Mobile banking is one of the most promising opportunities for financial service providers to offer their services via multiple electronic channels. But the customers have to be aware of this technology. Due to lack of awareness and the fear of new risks and threats from hackers, thieves and crackers (Katz, 1997), the customers are not willing to use it (Katz, 1997). This section studies the expectations of the respondents of the current research work on the usage of mobile banking. The sample units were asked to state their views on the statements related to their expectations in the usage of mobile banking in a five point rating scale as either 'strongly agree'/'agree'/'neutral'/'disagree'/'strongly disagree'. Scores were assigned from +2 to -2 respectively. The

following Table-26 shows the obtained results on expectations of the respondents on using mobile banking.

**TABLE-26**

**EXPECTATIONS ON MOBILE BANKING**

Expectations		SA	A	N	DA	SDA	Total
Must be reliable to use	N	114	218	66	2	0	400
	R	28.5	<b>54.5</b>	16.5	0.5		100
Must have security protection	N	124	184	92	0	0	400
	R	31	<b>46</b>	23	0	0	100
Must be cost saving and less time consuming	N	155	134	109	2	0	400
	R	<b>38.75</b>	33.5	27.25	0.5	0	100
Banks to provide education to customers on mobile banking	N	155	134	109	2	0	400
	R	<b>38.75</b>	33.5	27.25	0.5	0	100
Banks to design customer friendly services on mobile banking	N	173	130	75	22	0	400
	R	<b>43.25</b>	32.5	18.75	5.5	0	100
Banks to use advanced technology on mobile banking	N	173	130	75	22	0	400
	R	<b>43.25</b>	32.5	18.75	5.5	0	100

Source: Field survey, 2013 N- number stated, R-percentage to row total, SA- strongly agree, A- agree, N- neutral, DA- disagree, SDA- strongly disagree.

As inferred from Table-26 it is clear that the respondents expect banks to design ‘customer friendly service’ and ‘to use advanced technology’ with 43.25 percent each ‘strongly agree’ towards these two statements. Altogether 75.75 percent either ‘strongly agree’ or ‘agree’ on these two statements related to their expectations. Next to it they also would like to be educated in using the new product as it would reduce their cost and save their time. These were marked by 38.75 percent as ‘strongly agree’ and 33.5 percent as ‘agree’. About 28.5 percent of the respondents ‘strongly agree’ that their expectations are on ‘reliability’ and ‘security’.

Further investigation of the results shown in Table-27 reveals that the respondents expect banks to design customer friendly services on mobile banking (mean=1.1350) and to use advanced technology (mean=1.1350). The respondents also

expect mobile banking to be reliable (mean=1.11). This is closely followed by ‘mobile banking to be cost saving and less time consuming’ (mean=1.1050). The sample units further expect the banks to educate customers in the usage of mobile banking (mean=1.1050). All these expectations on mobile banking are ‘agreed’ by the respondents.

Subsequently, the customers also expect ‘security’ in the usage of mobile banking (mean=1.08). This is important because customers will refrain from making any transaction if they know the system is not secured.

**TABLE-27**

**DESCRIPTIVE STATISTICS ON EXPECTATION OF MOBILE BANKING**

<b>Expectations</b>	<b>N</b>	<b>Mean Score</b>	<b>Std. Deviation</b>	<b>Std. error mean</b>
Must be reliable to use	400	1.11	0.67753	0.3388
Must have security protection	400	1.0800	0.73139	0.3657
Must be cost saving and less time consuming	400	1.1050	0.81893	0.04095
Banks to provide education to customers on mobile banking	400	1.1050	0.81893	0.04095
Banks to design customer friendly services on mobile banking	400	1.1350	0.90765	0.04538
Banks to use advanced technology on	400	1.1350	0.90765	0.04538

mobile banking				
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Source: Estimated based on field survey, 2013

To find out whether frequency of usage of mobile banking depends on their expectations on mobile banking'.  $\chi^2$  test was applied. The null hypothesis tested was Ho: Frequency of usage of mobile banking is independent on expectations on mobile banking.

Ha: Frequency of usage of mobile banking depends on expectations.

The calculated  $\chi^2$  values are shown in Table-28.

**TABLE-28**  
**FREQUENCY OF USAGE OF MOBILE BANKING WITH EXPECTATIONS -  $\chi^2$  TEST**

Expectations	Calculated $\chi^2$ value	Degree of freedom	significance
Must be reliable to use	23.806	12	.022
Must have security protection	30.270	8	.000
Must be cost saving and less time consuming	12.832	12	.381
Banks to provide education to customers on mobile banking	23.857	12	.021
Banks to design customer friendly services on mobile banking	18.634	12	.132
Banks to use advanced technology on mobile banking	41.569	16	.000

Source: Calculated based on field survey, 2013

Frequency of usage of mobile banking depends on the expectations of the customers in respect of 'reliability', 'security', the banks 'educating the customers on the use of mobile banking' and using 'advanced technology' and independent of the customers perception on mobile banking to be 'less cost and time saving' and 'customer friendly service'.

## **4.7 Usage of mobile phone**

Text messaging and cameras have become nearly universal features for cell phones. The newest cell phones have internet browsing capabilities, provide news updates, play downloaded music, ring tones and streaming video, or operate as GPS devices. Smart phones have become a staple in the business world, with some executives virtually becoming dependent on their cell phones. After 2006, people started talking about the quality of camera, its resolution, screen resolution, memory card capabilities, file compatibility etc in mobile phones. MMS feature is a huge success after the connectivity of internet through mobiles emerged. Internet access through mobiles gets its importance only after 2006 (<http://reviews.wikinut.com/What-is-The-Purpose-of-a-Mobile-Phone/1cmd0ug1/>).

This section analysed the customers' views on the usage of mobile banking under the following headings.

4.7.1 Views on usage of mobile phones

4.7.2 Frequency of usage and use of mobile phones

4.7.3 Purpose of using mobile phones

### **4.7.1 Views on usage of mobile phones**

The customers were asked to state the reasons on usage of mobile phones. They were given fifteen reasons such as 'making calls', 'SMS/MMS', 'photograph/videos', 'internet', 'music', 'games', 'E-mail', 'maps', 'weather/sports', 'social network', 'downloading applications', 'price of products', 'watching TV', 'banking' and 'buying products'. The respondents gave their opinion on a five point rating scale as 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'. The values

assigned for these were 2,1,0, -1 and -2 respectively. The scores given by the customers on the fifteen stated reasons are shown in the following Table –29

**TABLE-29**  
**USAGE OF MOBILE PHONE**

<b>S.No</b>	<b>Usage of mobile phones</b>		<b>SA (2)</b>	<b>A (1)</b>	<b>N (0)</b>	<b>DA (-1)</b>	<b>SDA (-2)</b>	<b>Total</b>
1	To make Calls	N	320	66	14	0	0	400
		R	(80)	(16.5)	(3.5)	(0)	(0)	100
2	To send/receive SMS/MMS	N	284	82	29	0	5	400
		R	(71)	(20.5)	(7.25)	(0)	(1.25)	100
3	To take Photograph & videos	N	206	122	62	0	10	400
		R	(51.5)	(30.5)	(15.5)	(0)	(2.5)	100
4	To browse internet	N	213	121	49	0	16	400
		R	(53.25)	(30.5)	(12.25)	(0)	(4)	100
5	To listen music	N	209	121	52	0	18	400
		R	(52.25)	(30.25)	(13)	(0)	(4.5)	100
6	To play games	N	169	136	57	6	32	400
		R	(42.25)	(34)	(14.25)	(1.5)	(8)	100
7	To send/receive e mails	N	138	166	67	0	29	400
		R	(34.5)	(41.5)	(16.75)	(0)	(7.25)	100
8	To see maps & directions	N	90	152	108	5	45	400
		R	(22.5)	(38)	(27)	(1.25)	(11.25)	100
9	To read news, weather & sports	N	102	129	111	9	49	400
		R	(25.5)	(32.25)	(27.75)	(2.25)	(12.25)	100
10	To visit social network sites	N	134	117	100	5	44	400
		R	(33.5)	(29.25)	(25)	(1.25)	(11)	100
11	To download	N	143	133	59	7	58	400
		R	(35.75)	(33.25)	(14.75)	(1.75)	(14.5)	100
12	To find price of product	N	58	166	103	17	56	400

		R	(14.5)	(41.5)	(25.75)	(4.25)	(14)	100
13	To watch videos/ TV	N	92	151	102	15	40	400
		R	(23)	(37.5)	(25.5)	(3.75)	(10)	100
14	To do banking activities	N	199	100	76	4	21	400
		R	(49.75)	(25)	(19)	(1)	(5.25)	100
15	To buy products	N	54	<b>168</b>	87	26	65	400
		R	(13.5)	<b>(42)</b>	(21.75)	(6.5)	(16.25)	100

Source: Field survey, 2013 N- number stated, R-Row percentage, SA- strongly agree, A- agree, N- neutral, DA- disagree, SDA- strongly disagree.

The analysis reveals that majority of the respondents 'strongly agree' that they use mobile phones 'to make calls' (80 percent), to send/receive SMS/MMS (71 percent), 'to browse internet' (53.25 percent), 'to listen music' (52.25 percent), 'to take photograph & videos' (51.5 percent), 'for Banking' (49.75 percent), 'to play Games' (42.25 percent), 'to download' (35.75 percent) and 'to visit social network sites' (33.5 percent) and 'agree' for 'buying products' (42 percent), 'to send/receive e mails' & 'to find price of product (41.5 percent), 'to see maps & directions'(38 percent), 'to watch videos/TV' (37.5 percent) and 'to download'(33.25 percent).

The average scores given by the customers on the fifteen stated reasons on the usage of mobile phones and the assigned ranks are given in Table -30.

**TABLE-30**  
**AVERAGE SCORES ON USAGE OF MOBILE PHONE**

S.No	Usage of mobile phones	Average scores	Rank
1	To make calls	1.765	1
2	To send/receive SMS/MMS	1.6	2
3	To browse internet	1.29	3
4	To take photograph & videos	1.285	4
5	To listen music	1.2575	5
6	<b>To do banking activities</b>	1.13	<b>6</b>
7	To play games	1.01	7
8	To send/receive e mails	0.96	8
9	To download	0.74	9

10	To visit social network sites	0.73	10
11	To see maps & directions	.5925	11
12	To read news, weather & sports	.565	12
13	To find price of product	.3825	13
14	To watch videos/ TV	0.6	14
15	To buy products	0.3	15

Source: Field survey, 2013

Based on the average scores given by the respondents on the usage of mobile phone, it is inferred that the first two ranks were given for 'making calls' (rank1), and for making 'SMS/MMS' (rank2). These are the two reasons for which the respondents on an average 'strongly agree' for using mobile phones. The respondents have given 6<sup>th</sup> rank for using mobile phones for bank related activities giving an average score of 1.13.

#### 4.7.2 Frequency of usage and use of mobile phone

To find out whether frequency of usage of mobile banking is dependent with the purpose of using mobile phone; Chi-square test was applied using SPSS 16 version. The null hypotheses tested was

Ho: There is no association between frequency of usage of mobile banking and the purpose of using mobile phone.

Ha: There is association between frequency of usage of mobile banking and the purpose of using mobile phone.

The obtained results are shown in the following Table-31

**TABLE-31**  
**FREQUENCY OF USAGE AND USE OF MOBILE PHONE -  $\chi^2$  TEST**

Use of mobile phone	Calculated $\chi^2$ value	Degree of freedom	Table $\chi^2_{.05}$ value	Inference Ho
To make calls	17.64	8	15.50	Rejected
To send/receive SMS/MMS	28.44	12	21.02	Rejected
To take photograph & videos	8.78	12	21.02	Accepted
To browse internet	10.97	12	21.02	Accepted
To listen music	19.40	12	21.02	Accepted
To play games	41.76	16	26.29	Rejected
To send/receive e-mails	23.32	12	21.02	Rejected
To see maps & directions	46.06	16	26.29	Rejected
To read news, weather & sports	39.12	16	26.29	Rejected
To visit social network Sites	25.55	16	26.29	Accepted
To download	36.05	16	26.29	Rejected
To find price of product	28.61	16	26.29	Rejected
To watch videos/ TV	47.33	16	26.29	Rejected
<b>To do banking activities</b>	38.87	16	26.29	<b>Rejected</b>
To buy products	35.92	16	26.29	Rejected

Source: sample survey, 2013

The calculated  $\chi^2$  values were compared with the theoretical values of  $\chi^2$  at given degrees of freedom at .05 levels. From the results, it could be seen that the frequency of usage of mobile banking depends on the use of mobile phones for 'making calls', 'for sending/receiving 'SMS/MMS', 'for playing games', 'for sending or receiving email', 'for looking up maps/direction', 'for reading weather reports', 'for downloading applications', for 'finding price of products', 'watching TV', 'for banking activities' and 'for buying products'. Customers' behaviour in the frequency of usage of mobile banking is found to be dependent on they use mobile phones for bank related activities.

### 4.7.3 Purpose of using mobile phones

Mobile phones are used for personal as well as for carrying out bank related activities. This section gives the responses given by the sample units on the usage of mobile phone for bank related activities. The customers stated whether they use mobile phone for the various bank related activities or not, by stating 'Yes' or 'No' to the statements; and the responses are given in the following Table-32 , assigning score '1' for 'yes' and '0' for 'no'.

**TABLE –32**

**MOBILE PHONES FOR BANK RELATED ACTIVITIES**

usage of Mobile banking		Daily	Once in a week	Twice in a month	Once in a month	Rarely	Total
Activities							
SMS alert on bank transaction	N	45	104	97	81	33	360
	R	12.5	28.9	26.9	22.5	9.2	100
	C	95.7	91.2	86.6	86.2	100	<b>90</b>
Check balance account	N	44	98	97	83	31	353
	R	12.5	27.8	27.5	23.5	8.8	100
	C	93.6	86	86.6	88.3	93.9	88.2
Download Mobile banking Applications	N	40	93	85	74	29	321
	R	12.5	29	26.5	23.1	9	100
	C	85.1	81.6	75.9	78.7	87.9	80.2
View last three bank transactions	N	35	93	90	71	24	313
	R	11.2	29.7	28.8	22.7	7.7	100
	C	74.5	81.6	80.4	75.5	72.7	78.2
Mobile recharging	N	38	87	79	67	27	298
	R	12.8	29.2	26.5	22.5	9.1	100
	C	80.9	76.3	70.5	71.3	81.8	74.5
Contd							
usage of Mobile banking		Daily	Once in a week	Twice in a month	Once in a month	Rarely	Total
Activities							

Transfer money between two bank accounts	N	39	85	81	60	26	291
	R	13.4	29.2	27.8	20	8.9	100
	C	83	74.6	72.3	63.8	78.8	72.8
Request bill payment	N	34	79	71	67	21	272
	R	12.5	29	26.1	24.6	7.7	100
	C	72.3	69.3	63.4	71.3	63.6	68
Locate ATM	N	31	67	73	53	21	245
	R	12.7	27.3	29.8	21.6	8.6	100
	C	66	58.8	65.2	56.4	63.6	61.2
PIN provision, change of PIN	N	31	69	63	59	18	240
	R	12.9	28.8	26.2	24.6	7.5	100
	C	66	60.5	56.2	62.8	54.5	60
Pay electricity bill	N	30	65	64	59	18	236
	R	12.7	27.5	27.1	25	7.6	100
	C	63.8	57	57.1	62.8	54.5	59
Cheque book request	N	26	73	63	52	18	232
	R	11.2	31.5	27.2	22.4	7.8	100
	C	55.3	64	56.2	55.3	54.5	58
Enquiry for cheque status	N	27	68	68	47	18	228
	R	11.8	29.8	29.8	20.6	7.9	100
	C	57.4	59.6	60.7	50	54.5	57
Access card statement	N	28	65	59	47	22	221
	R	12.7	29.4	26.7	21.3	6.1	100
	C	59.6	57	52.7	50	33.3	55.25
View fixed deposit details	N	30	64	58	51	12	215
	R	14	29.8	27	23.7	5.6	100
	C	63.8	56.1	51.8	54.3	36.4	53.8
Contd							
<b>Usage of Mobile banking</b>		<b>Daily</b>	<b>Once in a week</b>	<b>Twice in a month</b>	<b>Once in a month</b>	<b>Rarely</b>	<b>Total</b>
<b>Activities</b>	N	26	58	52	50	17	203
	R	12.8	28.6	25.6	24.6	8.4	100
	C	55.3	50.9	46.4	53.2	51.5	50.8

To avail Demand Draft (DD)	N	24	43	52	41	14	174
	R	13.8	24.7	29.9	23.6	8	100
	C	51.1	37.7	46.4	43.6	42.4	43.5
Pass book updation	N	19	48	46	44	16	173
	R	11	27.7	26.6	25.4	9.2	100
	C	40.4	42.1	41.1	46.8	48.5	43.2
Repayment of loan	N	26	50	44	41	11	172
	R	15.1	29.1	25.6	23.8	6.4	100
	C	55.3	43.9	39.3	43.6	33.3	43
Buy stocks or mutual funds	N	22	36	34	31	9	132
	R	16.7	27.3	25.8	23.5	6.8	100
	C	46.8	31.6	30.4	33	27.3	33
Sell stocks or mutual funds	N	22	33	32	32	9	128
	R	17.2	25.8	25	25	7	100
	C	46.8	28.9	28.6	34	27.3	32

Source: Field survey 2013, N- number stated, R- row percentage, C-column percentage.

The data shows that about 60 to 80 percent of the sample units use mobile phones for 'recharging mobile ', 'to locate ATM' and 'PIN provision, change of PIN'. About 40 to 60 percent of the respondents use mobile phones for 'paying electricity bill' and for 'accessing card statement'. In the case of banking purpose the data reveals that about 90 percent of the respondents use mobile phones for getting 'SMS alert on bank transaction'. Next to it, about 88 percent of the respondents use mobile phones 'for checking balance account'. About 60 to 80 percent of the respondents use mobile phones 'for downloading mobile banking applications', 'viewing last three transactions', 'transferring money between bank accounts' and 'requesting bill payment'. About 40 to 60 percent of the respondents were using mobile phones for bank related activities such as 'cheque book request', 'enquiry for cheque status', 'viewing fixed deposit details', 'stopping payment on cheque', 'to avail demand draft', 'for pass book updation' and ' for repayment of loan'. Prerna Sharma Bamoriya (2011) also reported in his study that checking balance through mobile banking was most used service among his sample units.

**The analysis reveals that the sample units of the current study ‘strongly agreed’ that mobile phones are used for ‘making calls’ and that about 90 percent of the customers of the current study use mobile phones for seeing the SMS alert on bank transactions.**

#### **4.8. Problems in mobile banking usage**

Regardless of the benefits of mobile phone banking, the adoption of this service is still low. According to Gartner (2007), the adoption of mobile banking has been low because customers are resistant. Hence it is important to find out the problems that the customers face while using mobile banking. This section studies the problems that the respondents of the current study feel to be present in the usage of mobile banking

M-banking provides limited range of services. It does not provide deposit facility which is an essential service for the customers. If the customers want to deposit their money they must go to the branch. Continuous and good quality of cellular service connectivity is not available in India (<http://mpira.ub.uni-muenchen.de/28724/>). Most of the people do not have idea about mobile banking and how it is used; they do not have clear idea about the benefits of mobile banking. Security and trust are important aspects of banking services, but people have much of doubts about its security and trustworthiness ([www.researchgate.net/...Banking\\_Services](http://www.researchgate.net/...Banking_Services)). This section studies the problems in the usage of mobile banking. The sample units were asked to state their views on the statements related to the problems in the usage of mobile banking in a five point rating scale as either ‘strongly agree’, or ‘agree’, or ‘neutral’, or ‘disagree’, or ‘strongly disagree’. Scores were assigned from +2 to -2 respectively. The average scores given by the customers on the eleven problems in the usage of mobile banking and the assigned ranks are given in Table-33

Based on the average scores given by the respondents on the problems in the usage of mobile banking, it is inferred that the first two ranks were given for ‘MB would make feel frustrated’ (rank1), and for ‘network problem’ (rank 2). Further, it can be seen that all the respondents are neutral in their views on the problems in the usage of mobile banking; the average scores lying between 0.4375 to 0.015. It is to be noted that

in the current research work, the customers have assigned only 8<sup>th</sup> rank to 'security' problems. But in the study of Preeti Singh (2011), it was reported that 64 percent of the respondents either 'strongly agree' or 'agree' that mobile banking is not secure. The One-way Kolmogorov-Smirnov test summary was also given in the following Table-33 to explore in detail the problems in the usage of mobile banking by the respondents of the current study.

**TABLE- 33**

**PROBLEMS IN THE USAGE OF MOBILE BANKING**

<b>S. No</b>	<b>Problems</b>	<b>N</b>	<b>Mean</b>	<b>Rank</b>	<b>Kolmogorov Smirnov Z</b>	<b>Asym p.sig</b>
1	MB would make feel frustrated	400	0.44	1	4.367	.000
2	Network problem	400	0.4375	2	4.267	.000
3	Limited scope for personal advice on banking transactions	400	0.24	3	4.382	.000
4	Lack of knowledge about MB transactions	400	0.21	4	4.478	.000
5	Not easy to use	400	0.20	5	3.875	.000
6	Mobile phone could be stolen	400	0.15	6	4.045	.000
7	MB cannot solely provide customers all banking services	400	0.08	7	3.769	.000
8	Security problem	400	0.045	8	3.443	.000

9	High cost of MB	400	0.042	9	3.988	.000
10	Less storage	400	0.02	10	3.659	.000
11	Transactions are not exhibited in the mobile screen	400	0.015	11	3.370	.000

Source: Field survey, 2013

All the stated problems were found to be statistically significant at 1 percent level. As 'network problem' is statistically significant in the usage of mobile banking by the respondents, it can be stated that banks have to coordinate with the telecom companies to improve their network to remove this problem.

The respondents felt that there is 'limited scope for personal advice on banking transactions', which is also statistically significant. This calls for the banking sector to create necessary sessions with the customers to arrange for clearance of their doubts or misgivings about the usage of mobile banking.

Another problem which is statistically significant in the usage of mobile banking is 'lack of knowledge about MB transactions'. This again expects the banks to be more helpful in creating awareness on the usage of mobile banking among the customers.

'Security problem' in the usage of mobile banking is yet another significant problem in the usage of mobile banking. This necessitates the banks and the telecom authorities to provide end- to - end security.

The sample units stated that the 'high cost of MB' which is found to be yet another significant factor in the usage of mobile banking. This calls for the attention of the telecom authorities to reduce the cost of SMS charges

Some of the respondents felt that the cash transactions enacted through mobile banking is not available to the customers due to server problem. Telecom authorities have to be aware of this problem and have to alert the customers on bank transactions carried out through mobile phones.

#### **4.9 Adoption of mobile banking**

Introducing mobile banking to customers is valuable since such a technological service brings convenience to customers and offers benefits such as lower costs, saving time and making transactions from anywhere (Grabner-Krauter and Faullant,

2008). The sample units of the current study were asked to express their views on mobile banking adoption in five point rating scale as strongly agree with the score of 2, agree with the score of 1, neutral with 0, and disagree with the score of -1 and strongly disagree with the score of -2.

The eight statements related to the views of the respondents in the adoption of mobile banking and the average scores assigned on them are given in Table-34

**TABLE-34**  
**VIEWS ON MOBILE BANKING ADOPTION**

S.No	Frequency of usage Views	Daily	Weekly	Twice in a month	Once in a month	Rarely
1	Instructions are clear and understandable	0.7872	0.8421	0.8125	0.5774	0.6363
2	Complete banking tasks more quickly	0.7446	0.7192	0.7857	0.7234	0.5757
3	MB is trustworthy	<b>0.8936</b>	<b>1.0701</b>	<b>1.0625</b>	0.7446	0.5454
4	Trust MB to protect privacy	0.4468	0.8333	0.9107	0.4361	<b>0.6969</b>
5	Using MB is completely compatible with current situation	0.5957	0.8859	0.8125	0.6595	0.5151
6	It is expected that people like to use MB	0.7446	1.0087	0.8839	0.6808	0.6363
7	MB is beneficial	0.7446	0.8947	0.8214	0.6595	0.4848
8	Less expensive	0.7872	<b>1.0701</b>	1	<b>0.7765</b>	<b>0.6969</b>

Source: Estimated based on field survey, 2013

The customers of the current study 'agree' on all the eight statements given in Table 34 based on which they adopt mobile banking. In the case of daily users of

mobile banking they adopt mobile banking because of 'trust' (score 0.8936). Next to this 'Instructions are clear and understandable' and 'less expensive' (score 0.7872) were found to be the reasons for the adoption of mobile banking. In the case of weekly users of mobile banking they adopt mobile banking because of 'trust' and 'less expensive' (score 1.0701) and 'It is expected that people like to use MB' (score 1.0087). In the case of twice in a month user's 'trust' (1.0625) and 'less expensive' (1) were the main reasons for the adoption of mobile banking. In the case of once in a month users 'less expensive' (0.7765) and 'trust' (0.7446) were the main reasons. In the case of rarely users of mobile banking 'trust MB to protect privacy' and 'less expensive' (0.6969) were the main reasons for the adoption of mobile banking. The findings report 'trust' as the main factor for customers to adopt mobile banking, average score assigned on this being high.

To find out whether frequency of usage of mobile banking is dependent on the above stated factors chi-square test was applied. The null hypothesis tested was

Ho: Frequency of usage of mobile banking is independent of the views on adoption of mobile banking

Ha: Frequency of usage of mobile banking is not independent of the views on adoption of mobile banking

The calculated chi square values for the above stated variables are given in the following Table-35

**TABLE-35**  
**ADOPTION OF MOBILE BANKING-  $\chi^2$  TEST**

<b>Views</b>	<b>Calculated <math>\chi^2</math> value</b>	<b>Degree of freedom</b>	<b>Asymp. Sig.</b>	<b>Inference Ho</b>
Instructions are clear and understandable	336.4	16	.000	Rejected
Complete banking tasks more quickly	719.3	16	.000	Rejected
MB is trustworthy	254.7	16	.000	Rejected
Trust MB to protect privacy	539.6	16	.000	Rejected

Using MB is completely compatible with current situation	550.6	16	.000	Rejected
It is expected that people like to use MB	1600	16	.000	Rejected
MB is beneficial	453.5	16	.000	Rejected
Less expensive	249.8	16	.000	Rejected

Source: Calculated based on field survey, 2013

The above Table-35 clearly says that frequency of usage of mobile banking is closely related with the chosen eight statements ('Instructions are clear and understandable', 'Complete banking tasks more quickly', 'MB is trustworthy', 'Trust MB to protect privacy', 'Using MB is completely compatible with current situation', 'It is expected that people like to use MB', 'MB is beneficial' and 'Less expensive') on the views of the respondents in their adoption of mobile banking.

The extent of influence of the views of the respondents in the adoption of mobile banking on the frequency of usage of mobile banking, multiple regression equation was fitted using SPSS 16 version. The estimated parameters of the model is shown in the following Table-36

**TABLE-36**  
**ADOPTION OF MOBILE BANKING – LINEAR REGRESSION MODEL**

Variables	B	Std Error	t- value	Significance
Constant	0.213*	0.055	3.837	0.000
Instructions are clear and understandable	0.402*	0.090	4.678	0.000
Complete banking tasks more quickly	0.291*	0.081	3.582	0.000
MB is trustworthy	0.621*	0.059	10.578	0.000
Trust MB to protect privacy	0.192*	0.047	4.071	0.000
Using MB is completely compatible with current situation	0.111	0.071	1.563	0.119
It is expected that people like to use MB	0.111*	0.024	4.639	0.000
MB is beneficial	0.749*	0.061	12.206	0.000
Less expensive	-0.224*	0.048	-4.678	0.000

R <sup>2</sup>	0.987			0.000
Sample size (N)	400			

Source: Estimated based on field survey, 2013

Dependent variable: frequency of usage of mobile banking, \*statistically significant at 1% level

The estimated results reveal that excepting the variable ‘Using MB is completely compatible with current situation’ all the other variables are significant in explaining the variations in the dependent variable, viz., and frequency of usage of mobile banking. The independent variables, viz., ‘Instructions are clear and understandable’, ‘Complete banking tasks more quickly’, ‘MB is trustworthy’, ‘Trust MB to protect privacy’, ‘It is expected that people like to use MB’ and ‘MB is beneficial’ had significant and expected positive relation in the frequency of usage of mobile banking by the respondents of the current study. The findings were in consonance with the earlier studies (Cohen et al., 2007). The variables ‘Less expensive’ significantly and negatively determine the frequency of usage of mobile banking. This is consistent with the earlier studies.

The chosen variables together could explain about 99 percent of the variations in the ‘frequency of usage of mobile banking’.

#### **4.10 Models on Intention to adopt mobile banking**

To determine the characteristics of mobile banking adoption, Technology Acceptance Model (TAM) (Lee et al, 2008; Chingmun cheah et al, 2010), Modified Technology Acceptance Model (TAM) (ki soon lee et al, 2007; Hanudin Amin and Ramayah 2010; Mohamed Talaghani et al 2011; Norzaidi Mohd Daud 2011; Das Gupta and Siddhartha 2011; Thamarai Selvan et al 2011) were used by researchers. Various studies (discussed in chapter II) have been carried out by adding different constructs with the original Technology Acceptance Model (TAM) constructs. The sample units of the current study were asked to express their views as either ‘strongly agree’ or ‘agree’ or ‘neutral’ or ‘disagree’ or ‘strongly disagree’ on 30 statements (Table-39) related to the adoption of mobile banking. The scores assigned were ‘5’ for ‘strongly agree’, ‘4’ for ‘agree’, ‘3’ for ‘neutral’, ‘2’ for ‘disagree’ and ‘1’ for ‘strongly disagree’. The mean scores obtained for the 30 statements, as given in Table-39, lie between 3.63 and 4.02

implying that the sample units agree on the given statements on their intention to adopt mobile banking. To reduce the 30 statements into fewer factors, factor analysis technique was applied. For this, the statements were first tested for 'reliability' using KMO Bartlett's test of Sphericity

**TABLE -37**

**KMO AND BARTLETT'S TEST**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.838
Bartlett's Test of Sphericity	Approx. Chi-square	1.0340
	Degrees of Freedom	435
	Significance	.000

Source: Estimated based on field survey, 2013

From the chi-square value and KMO measure of sampling adequacy, the statements were found to be reliable.

Principal component analysis and rotation method of variance were applied to extract factors. The communalities and the eigen values obtained for the chosen 30 variables are given in the following Table-38.

**TABLE-38  
COMMUNALITIES AND EIGEN VALUE**

S. No	Adoption of mobile banking	Communalities	Factors	Factor	
				Eigen value	% of variance
1	Complements existing banking channels	.678	1	<b>12.766</b>	42.553
2	Account transfer quickly	.638	2	<b>2.523</b>	8.411
3	Websites are user friendly	.645	3	<b>1.763</b>	5.876
4	Efficiency in using the service	.735	4	<b>1.626</b>	5.419
5	Efficient and effective in utilizing banking service	.711	5	<b>1.357</b>	4.522
6	MB is beneficial	.706	6	<b>1.224</b>	4.079
7	Instructions are clear and understandable	.768	7	.977	contd 3.256

8	Using MB fits well with the way	.641	8	.857	2.856
9	Ease and convenience of service	.837	9	.797	2.658
10	Never having congestion	.644	10	.726	2.420
11	Accurate financial services	.758	11	.690	2.298
12	MB provides reliable financial services	.692	12	.582	1.940
13	Trust MB to protect privacy	.774	13	.444	1.478
14	Wireless infrastructure can be trusted	.602	14	.431	1.435
15	The bank will keep its promises and commitments of MB services	.688	15	.389	1.296
16	MB is good idea	.751	16	.376	1.252
17	Positive perception on MB	.683	17	.346	1.153
18	Enough time to use MB	.769	18	.305	1.017
19	Enough money to use MB	.782	19	.275	.918
20	Using MB is completely compatible with current situation	.713	20	.054	.180
21	Using MB is compatible with life style	.786	21	.058	.192
22	It is expected that people like to use MB	.647	22	.247	.822
23	MB provides financial services	.713	23	.228	.761
24	MB is financially secure	.728	24	.211	.704
25	Operations performed are completed without any brokerage	.579	25	.180	.599
26	No worry about the security of MB	.687	26	.154	.515
27	Money transactions using MB was safe	.754	27	.135	.451
28	The bank will keep customer's best interest in mind when providing MB services	.672	28	.107	.356
29	Less expensive	.740	29	.099	.328
30	Easier than using computer	.738	30	.076	.253

Source: Estimated based on field survey, 2013

As the communalities of the chosen 30 statements were above 0.5; it implies that the 30 statements could be retained for further analysis. Since the eigen values exceed '1' for six factors, these were retained in the analysis. These six factors together shows about 70.86 percent of the variations in the variables. The factor loadings of the six factors within the variables are given in the following Table-39.

**TABLE-39**  
**FACTOR MATRIX**

S.NO	Adoption of mobile banking	Mean score	Factor Loadings					
			Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1	Complements existing banking channels	3.96	<b>0.6436</b>	0.3945	0.3642	0.3973	0.2664	0.3987
2	Account transfer quickly	3.95	<b>0.7872</b>	0.6496	0.5510	0.6088	0.4707	0.5351
3	Websites are user friendly	3.82	<b>0.7741</b>	0.5708	0.5473	0.6599	0.5548	0.5051
4	Efficiency in using the service	4.01	<b>0.7712</b>	0.5897	0.6317	0.5483	0.5212	0.6345
5	Efficient and effective in utilizing banking service	4.02	<b>0.7726</b>	0.6203	0.6283	0.4409	0.4834	0.5066
6	MB is beneficial	3.76	<b>0.7708</b>	0.6059	0.5547	0.7614	0.5173	0.5267
7	Instructions are clear and understandable	3.91	0.7652	<b>0.7546</b>	0.5241	0.6118	0.4566	0.5552
8	Using MB fits well with the way	3.64	0.5152	<b>0.7299</b>	0.5259	0.4324	0.3454	0.5195
9	Ease and convenience of service	3.72	0.4911	<b>0.7370</b>	0.5956	0.4026	0.3313	0.5225
10	Never having congestion	3.83	0.4181	<b>0.6346</b>	0.3894	0.5340	0.5477	0.5953
11	Accurate financial services	3.64	0.5115	<b>0.7030</b>	0.5500	0.6951	0.6210	0.7067
12	MB provides reliable financial services	3.75	0.6025	0.6200	<b>0.7942</b>	0.4049	0.4323	0.5508
13	Trust MB to protect privacy	3.70	0.4769	0.5070	<b>0.6412</b>	0.4323	0.3315	0.4897
14	Wireless infrastructure can be trusted	3.94	0.3594	0.3034	<b>0.6356</b>	0.3506	0.3560	0.4905
15	The bank will keep its promises and commitments of MB services	3.90	0.5409	0.5277	<b>0.6885</b>	0.4769	0.6057	0.6793
S.NO	Adoption of mobile banking	Mean score	Factor Loadings					
			Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
16	MB is good idea	3.79	0.5708	0.4988	0.4264	<b>0.7646</b>	0.5491	0.5263
17	Positive perception on MB	3.79	0.6836	0.5313	0.4736	<b>0.7877</b>	0.5557	0.4564

18	Enough time to use MB	3.71	0.6885	0.7471	0.5880	<b>0.8990</b>	0.5935	0.6917
19	Enough money to use MB	3.64	0.6392	0.7323	0.5153	<b>0.8777</b>	0.5289	0.7119
20	Using MB is completely compatible with current situation	3.74	0.5956	0.6077	0.6776	0.6552	<b>0.9259</b>	0.7102
21	Using MB is compatible with life style	3.80	0.5123	0.5398	0.3960	0.4868	<b>0.8247</b>	0.5245
22	It is expected that people like to use MB	3.66	0.4626	0.6147	0.4964	0.3057	0.4114	<b>0.4923</b>
23	MB provides financial services	3.63	0.5802	0.6199	0.5439	0.5306	0.3231	<b>0.5469</b>
24	MB is financially secure	3.82	0.4816	0.5293	0.5318	0.4050	0.4181	<b>0.6993</b>
25	Operations performed are completed without any brokerage	3.98	0.4268	0.5140	0.6466	0.3954	0.3606	<b>0.6888</b>
26	No worry about the security of MB	3.83	0.4440	0.4473	0.4535	0.5108	0.5305	<b>0.7030</b>
27	Money transactions using MB was safe	3.92	0.4178	0.5287	0.4869	0.4628	0.6223	<b>0.6820</b>
28	The bank will keep customer's best interest in mind when providing MB services	3.83	0.4948	0.5435	0.6393	0.5984	0.5859	<b>0.7628</b>
29	Less expensive	3.73	0.4604	0.6636	0.5882	0.6067	0.5303	<b>0.7834</b>
30	Easier than using computer	3.65	0.5435	0.6528	0.6257	0.5872	0.5649	<b>0.7735</b>

Source: Estimated based on field survey, 2013

## Factor 1

The first six statements were highly loaded with Factor1. These statements are (i) 'mobile banking complements existing banking channels', (ii) 'account transfer quickly', (iii) 'websites are user friendly', (iv) 'efficiency in using the service', (v) 'efficient and effective in utilizing banking service' and (vi) 'mobile banking is beneficial'. They can be labeled as '**Perceived usefulness**'. Perceived usefulness refers to the degree to which "a person believes that use of the system will enhance his or her performance".

Adams et al., (1992) and Davis (1992) proved that usefulness recognition is important because it has been found to have a strong direct effect on the intention of adopters to use the innovation.

### **Factor 2**

Statements 7 to 11 were highly loaded with Factor 2. These statements are (vii) 'instructions are clear and understandable', (viii) 'using MB fits well with the way', (ix) 'ease and convenience of service', (x) 'never having congestion' and (xi) 'accurate financial services'. They can be labeled as '**Perceived ease of use**'. Perceived ease of use is the "degree to which a person believes that using a particular system would be free of effort". In the mobile setting, perceived ease of use represents the degree to which individuals associate freedom of difficulty with the use of mobile technology and services in everyday usage (Knutsen et al; 2005).

### **Factor 3**

Statements 12 to 15 were highly loaded with Factor 3. These statements are (xii) 'MB provides reliable financial services', (xiii) 'trust MB to protect privacy', (xiv) 'wireless infrastructure can be trusted' and (xv) 'the bank will keep its promises and commitments of MB services'. They can be labeled as '**Trust**'. Trust is "An individual reliance on another party under conditions of dependence and risk" (Currall and Judge; 1995). Pavlou (2003) proved that trust has positive effect on perceived usefulness.

### **Factor 4**

Statements 16 to 19 were highly loaded with Factor 4. These statements are (xvi) 'MB is good idea', (xvii) 'positive perception on MB', (xviii) 'enough time to use MB' and (xix) 'enough money to use MB'. They can be labeled as '**Attitude**'. Kalifa et al., (2003) reported that attitude has strong effect on intention to adopt mobile banking. Todd and Taylor (1995) have reported that there is a positive relationship between perceived ease of use and attitude.

### **Factor 5**

Statements 20 and 21 were highly loaded with Factor 5. These statements are (xx) 'using MB is compatible with life style' and (xxi) 'using MB is completely compatible

with current situation'. They can be labeled as '**Compatibility**'. Compatibility was found to be significant factor which reduces the level of risk perception and enhances customer's trust in 3G mobile banking services (Lee et al. 2003 Cited in Lin 2011). Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experience and needs of potential adopters (Roger 2003). Al-Majali and Nik Mat (2011) refer to compatibility as the extent to which the innovation supersedes all other options in meeting the desires and needs of the adopter.

#### **Factor 6**

Statements 22 to 30 were highly loaded with Factor 6. These statements are (xxii) 'it is expected that people like to use MB', (xxiii) 'MB provides financial services', (xxiv) 'MB is financially secure', (xxv) 'operations performed are completed without any brokerage', (xxvi) 'no worry about the security of MB', (xxvii) 'money transactions using MB was safe', (xxviii) 'the bank will keep customer's best interest in mind when providing MB services', (xxix) 'less expensive' and (xxx) 'easier than using computer'. They can be labeled as '**Intention to adopt mobile banking**'.

An attempt was made to find out how the chosen six factors, viz., 'perceived usefulness', 'perceived ease of use', 'trust', 'attitude', 'compatibility' and 'intention to adopt mobile banking' were related. To reduce the possibility of getting wrong answer, attention needs to be paid to reliability and validity (Saunders and Thornhill, 2003). Hence the six factors were first tested for their reliability. Reliability and validity tests were conducted for all the constructs in the conceptual model. The reliability of the six constructs used in the study was carried out using Visual Partial Least Squares (VPLS) software. The reliability of the constructs refers to the accuracy with which the constructs repeatedly measure the same phenomenon within permissible variation. The estimated Cronbach alpha value above 0.7 is considered as acceptable (Nunally, 1978). According to Sekaran (2000), if the value of Cronbach alpha reliabilities is less than 0.6, they are considered as poor, if the value is 0.7 they are acceptable, and the value above 0.8 is considered good. In Table-40 the average variance extracted scores (AVE) for all the constructs are greater than 0.5 indicating sufficient convergent validity.

**TABLE-40**  
**RELIABILITY AND VALIDITY CONSTRUCTS**

<b>Constructs</b>	<b>Composite Reliability</b>	<b>AVE</b>	<b>Cronbach Alpha</b>
Perceived usefulness	0.88	0.56	0.84
Perceived ease of use	0.83	0.50	0.76
Trust	0.78	0.48	0.64
Attitude	0.90	0.69	0.85
Intention to adopt mobile banking	0.88	0.47	0.85
Compatibility	0.86	0.76	0.70

Source: Estimated based on field survey, 2013

To find out how the five variables, viz., perceived usefulness, perceived ease of use, trust, attitude and compatibility influence the 'intention to adopt mobile banking', the following hypotheses were formulated.

H1: Trust has positive impact on the perceived usefulness to use mobile banking.

H2: Trust has positive impact on the perceived ease of use of mobile banking.

H3: Trust has positive impact on the compatibility to use mobile banking

H4: Perceived usefulness has a positive impact on the attitude to use mobile banking.

H5: Perceived ease of use has a positive impact on the attitude to use mobile banking.

H6: Attitude has positive impact on intention to use mobile banking.

H7: Compatibility has positive effect on the adoption of mobile banking.

### **Correlation of the model constructs**

The correlation values were generated using VPLS software for the constructs in the model. The results of the correlation analysis are shown in the following Table-41.

**TABLE-41**  
**CORRELATION OF THE MODEL CONSTRUCTS**

<b>Constructs</b>	<b>Perceived usefulness</b>	<b>Perceived ease of</b>	<b>Trust</b>	<b>Attitude</b>	<b>Compatibility</b>	<b>Intention to adopt</b>

		use				mobile banking
Perceived usefulness	1					
Perceived ease of use	0.766	1				
Trust	0.732	0.729	1			
Attitude	0.772	0.765	0.605	1		
Compatibility	0.635	0.656	0.638	0.664	1	
Intention to adopt mobile banking	0.691	<b>0.821</b>	0.806	0.727	0.718	1

Source: Estimated based on field survey, 2013

The correlation values among the constructs are greater than 0.6. Intention to adopt mobile banking has the highest correlation of 0.821 with perceived ease of use and trust has the lowest correlation of 0.605 with attitude.

With the five constructs the best fit of the model using VPLS Software is obtained and is given in the following Fig-13

### INTENTION TO ADOPT MOBILE BANKING WITH 'TRUST'

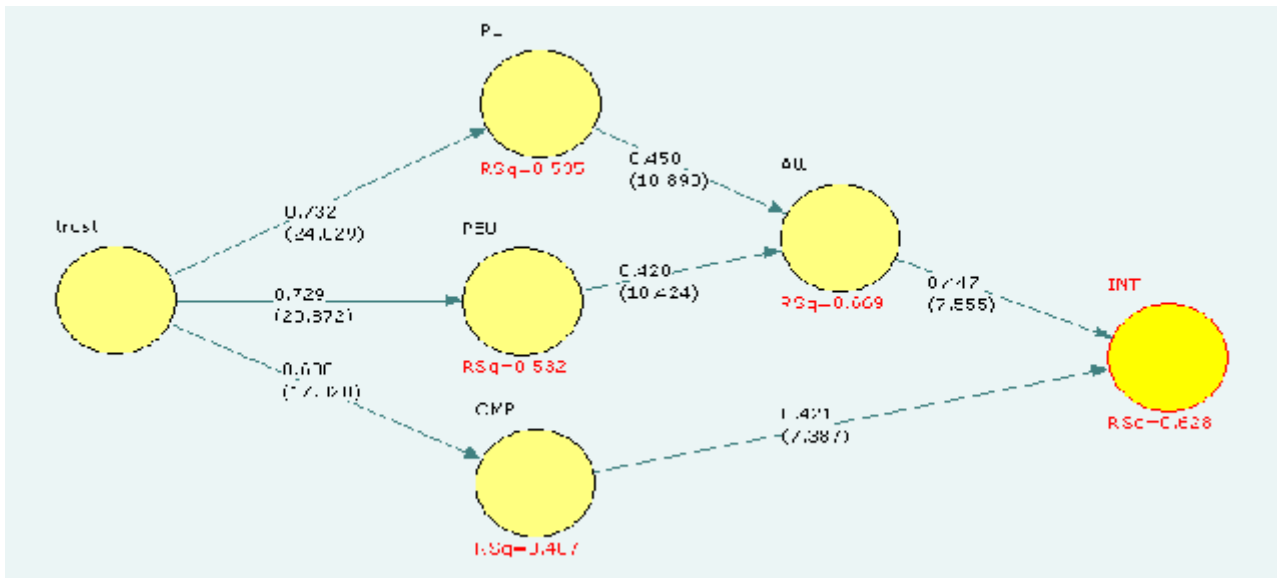


Fig-13

Figures denote standardised path coefficients. Figures in brackets denote their 't' statistic, PU-perceived usefulness, PEU-perceived ease of use, CMP-compatibility, Atti-attitude, INT-intention to adopt mobile banking

Significance for all paths were conducted using bootstrap resampling procedure. The test of each link is mapped to each path in the model. The estimated path coefficient along with their 't' statistic is shown in the model. All the paths are found to be significant and important in magnitude (Table-42)

**TABLE-42  
STRUCTURAL MODEL- BOOTSTRAP**

Hypothesis	Standardized path coefficient	t- statistic
Trust → perceived usefulness	0.7320	24.0290
Trust → perceived ease of use	0.7290	20.8724
Trust → Compatibility	0.6380	17.3201
Perceived usefulness → Attitude	0.4500	10.8896
Perceived ease of use → Attitude	0.4200	10.4239
Attitude → Intention to adopt mobile banking	0.4470	7.5551
Compatibility → Intention to adopt mobile banking	0.4210	7.3875

Source: Estimated based on field survey, 2013

The path between 'trust' and 'perceived usefulness' was found to be significant ( $t=24.0209$ ) with a path coefficient of 0.7320, there by supporting hypothesis 1. This is consistent with the finding of Wu and Chen (2005) who reported that there is significant relation between 'trust' and 'perceived usefulness'. 'Trust' accounted for 53 percent of the variation in path between trust and perceived usefulness

'Perceived ease of use' is predicted by 'trust' ( $\beta=0.729$ ). 'Trust' accounted for 53 percent of the variance in 'perceived ease of use', there by supporting hypothesis 2. This result is in consonance with the findings of Gefen et al., (2003) and Wu and Chen (2005). The path is also statistically significant ( $t= 20.8724$ ).

The path between 'trust' and 'compatibility' was found to be significant ( $t=17.3201$ ), there by supporting hypothesis 3. 'Trust' accounted for 40 percent variance in 'compatibility'.

'Attitude' is predicted by 'perceived usefulness' ( $\beta= 0.450$ ) and 'perceived ease of use' ( $\beta=0.420$ ). These two constructs together could explain 66 percent of the total variance in 'Attitude'. The path between 'perceived usefulness' and 'attitude' was found to be significant ( $t= 10.890$ ), there by supporting hypothesis 4. This is consistent with the findings of Todd and Taylor (1995) who reported a significant relation between usefulness and 'attitude'. In fact, 'perceived usefulness' has the strongest effect with path coefficient of 0.450 emphasizing the important role of an individual's 'perceived usefulness' in driving his attitude.

The path between 'perceived ease of use' and 'attitude' was found to be significant ( $t=10.4239$ ), there by supporting hypothesis 5. This is consistent with the findings of Todd and Taylor (1995) who in their study reported a significant relation between 'perceived ease of use' and 'attitude'.

'Attitude' ( $t=7.55$ ) has significant effect on 'intention' with a path coefficient of 0.447 and there by supporting hypothesis 6. In fact, 'attitude' has the strongest effect with a path coefficient of 0.447 emphasizing the important role of an individual's 'attitude' in deriving his intentions towards adoption of mobile banking. The findings were in consonance with the findings of Kalifa et al., (2003). But this is inconsistent with the findings of Todd and Taylor (1995) and Davis et al., (1989) who had found no significant relation between attitude and intention.

'Compatibility' is consistently related to 'innovation' adoption (Chen et al., 2000). 'Compatibility' ( $t=7.387$ ) has significant effect on 'intention' to adopt mobile banking there by supporting hypothesis 7. 'Compatibility' has impact with a path coefficient of 0.42 emphasizing the important role of an individual's 'compatibility' in driving his intention towards adoption of mobile banking. The results support the findings of Chen (2008) and Schierz et al., (2010). The model results depict that 'compatibility' together with 'Attitude' is able to explain 63 percent of the variations in the 'intention' to adopt mobile banking.

As in the estimated model, 'Trust' could explain only 40 to 53.5 percentage of the variances in the path with 'perceived usefulness' ( $R^2 = 0.535$ ), perceived ease of use ( $R^2 = 0.532$ ) and compatibility ( $R^2 = 0.407$ ), the researcher estimated another model with the exclusion of the construct 'Trust'.

The respondents were asked to express their views on 26 statements (which excluded the four statements on 'trust') related to the adoption of mobile banking in a five point rating scale, as 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'. The scores assigned were 5 for 'strongly agree', 4 for 'agree', 3 for 'neutral', 2 for 'disagree' and 1 for 'strongly disagree'. The 26 statements are reduced into 5 factors using factor analysis.

The 26 statements were first tested for its reliability using Kaiser-Mayer Ohlin and Bartlett's test of sphericity. The obtained values are shown in Table-43.

**TABLE -43**

**KMO AND BARTLETT'S TEST**

Kaiser-Meyer-Elkin Measure of Sampling Adequacy		0.847
Bartlett's Test of Sphericity	Approx. Chi-square	8.461
	Degrees of Freedom	325
	Significance	.000

Source: Estimated based on field survey, 2013

The results of KMO & Bartlett's test of Sphericity revealed that factor analysis can be carried out with the 26 statements effectively. Principal component method was applied. The communalities and the eigen value obtained for the 26 statements are given in the following Table- obtained for the six variables are given in the following Table –44

**TABLE-44**  
**COMMUNALITIES AND EIGEN VALUE**

S.No	Statements	Communalities	Factor	Factor	
				Eigen value	% of variance
1	Complements existing banking channels	.618	1	<b>11.456</b>	44.062
2	Account transfer quickly	.624	2	<b>2.301</b>	8.851
3	Websites are user friendly	.637	3	<b>1.675</b>	6.442
4	Efficiency in using the service	.737	4	<b>1.371</b>	5.275
5	Efficient and effective in utilizing banking service	.640	5	<b>1.201</b>	4.620
6	MB is beneficial	.735	6	.975	3.752
7	Instructions are clear and understandable	.773	7	.869	3.343
8	Using MB fits well with the way	.663	8	.744	2.862
9	Ease and convenience of service	.866	9	.711	2.734
10	Never having congestion	.644	10	.659	2.534
11	Accurate financial services	.748	11	.470	1.809
12	MB is good idea	.680	12	.444	1.706
13	Positive perception on MB	.685	13	.419	1.612
14	Enough time to use MB	.770	14	.384	1.477
15	Enough money to use MB	.777	15	.350	1.346
16	It is expected that people like to use MB	.633	16	.319	1.226
17	MB provides financial services	.714	17	.296	1.139
18	MB is financially secure	.747	18	.250	.960
19	Operations performed are completed without any brokerage	.540	19	.246	.947
20	No worry about the security of MB	.699	20	.207	.795
21	Money transactions using MB was safe	.608	21	.149	.571
22	The bank will keep customer's best interest in mind when providing MB services	.573	22	.147	.566
23	Less expensive	.712	23	.125	.479
24	Easier than using computer	.683	24	.091	.348
25	Using MB is compatible with life style	.792	25	.078	.298
26	Using MB is completely compatible with current situation	.708	26	.063	.244

Source: Estimated based on field survey, 2013

As the communalities for all the 26 variables exceed 0.5; the statements can be used for the factor analysis. The table shows that only 5 factors have their eigen values

greater than 'one'. These five factors could together explain about 69.25 percent of the variance in the 26 variables. The extracted factor loadings of these factors with the 26 variables are given in Table-45

**TABLE-45  
FACTOR MATRIX**

S.NO	Statements	Mean score	Factor Loadings				
			Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	Complements existing banking channels	3.96	<b>0.5866</b>	0.3981	0.3982	0.4000	0.2681
2	Account transfer quickly	3.95	<b>0.7924</b>	0.6551	0.6102	0.5368	0.4739
3	Websites are user friendly	3.82	<b>0.7843</b>	0.5714	0.6614	0.5069	0.5530
4	Efficiency in using the service	4.01	<b>0.7574</b>	0.5921	0.5501	0.6361	0.5267
5	Efficient and effective in utilizing banking service	4.02	<b>0.7669</b>	0.6190	0.4426	0.5081	0.4860
6	MB is beneficial	3.76	<b>0.8012</b>	0.6179	0.7628	0.5286	0.5120
7	Instructions are clear and understandable	3.91	0.7585	<b>0.7555</b>	0.6132	0.5573	0.4641
8	Using MB fits well with the way	3.64	0.5195	<b>0.6967</b>	0.4336	0.5211	0.3493
9	Ease and convenience of service	3.72	0.4962	<b>0.6978</b>	0.4038	0.5242	0.3307
10	Never having congestion	3.83	0.4341	<b>0.6645</b>	0.5348	0.5964	0.5456
11	Accurate financial services	3.64	0.5245	<b>0.7365</b>	0.6963	0.7080	0.6186
12	MB is good idea	3.79	0.5870	0.5242	<b>0.7662</b>	0.5281	0.5514
13	Positive perception on MB	3.79	0.7052	0.5445	<b>0.7894</b>	0.4584	0.5563
14	Enough time to use MB	3.71	0.7097	0.7613	<b>0.9001</b>	0.6939	0.5913
15	Enough money to use MB	3.64	0.6604	0.7461	<b>0.8786</b>	0.7140	0.5253
16	It is expected that people like to use MB	3.66	0.4635	0.5880	0.3068	<b>0.4942</b>	0.4177
17	MB provides financial services	3.63	0.5728	0.6113	0.5320	<b>0.5489</b>	0.3246
18	MB is financially secure	3.82	0.4665	0.5266	0.4061	<b>0.7004</b>	0.4181
19	Operations performed are completed without any brokerage	3.98	0.4243	0.5090	0.3969	<b>0.6898</b>	0.3603
S.NO	Statements	Mean score	Factor Loadings				
			Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
21	Money transactions using MB was safe	3.92	0.4310	0.5386	0.4641	<b>0.6837</b>	0.6270
22	The bank will keep customer's best interest in	3.83	0.5055	0.5697	0.6000	<b>0.7633</b>	0.5766

	mind when providing MB services						
23	Less expensive	3.73	0.4728	0.6869	0.6079	<b>0.7844</b>	0.5267
24	Easier than using computer	3.65	0.5484	0.6699	0.5885	<b>0.7744</b>	0.5618
25	Using MB is compatible with life style	3.80	0.5137	0.5543	0.4880	0.5263	<b>0.8406</b>
26	Using MB is completely compatible with current situation	3.74	0.6179	0.6285	0.6569	0.7115	<b>0.9174</b>

Source: Estimated based on field survey, 2013

The mean scores of the statements lie between 3.63 and 4.02 implying that the respondents 'agree' on the given statements on 'adoption of mobile banking'. Factor analysis results reveal that the 26 statements are reduced into five factors.

### Factor 1

The first six statements were highly loaded with Factor1. These statements are (i) mobile banking complements existing banking channels, (ii) account transfer quickly, (iii) websites are user friendly, (iv) efficiency in using the service, (v) efficient and effective in utilizing banking service and (vi) mobile banking is beneficial. They can be labeled as '**perceived usefulness**'. Perceived usefulness refers to the degree to which "a person believes that use of the system will enhance his or her performance". Adams et al., (1992) and Davis (1992) proved that usefulness recognition is important because it has been found to have a strong direct effect on the intention of adopters to use the innovation

### Factor 2

Statements 7 to 11 were highly loaded with Factor 2. These statements are (vii) instructions are clear and understandable, (viii) using MB fits well with the way, (ix) ease and convenience of service, (x) never having congestion and (xi) accurate financial services they can be labeled as '**perceived ease of use**'. Perceived ease of use is the "degree to which a person believes that using a particular system would be free of effort". In the mobile setting, perceived ease of use represents the degree to which individuals associate freedom of difficulty with the use of mobile technology and services in everyday usage (Knutsen et al; 2005).

### Factor 3

Statements 12 to 15 were highly loaded with Factor 3. These statements are (xii) MB is good idea, (xiii) positive perception on MB, (xiv) enough time to use MB and (xv) enough money to use MB they can be labeled as '**attitude**'. Kalifa et al., (2003) reported that attitude has strong effect on intention to adopt mobile banking. Todd and Taylor (1995) have reported that there is a positive relationship between perceived ease of use and attitude.

#### **Factor 4**

Statements 16 and 17 were highly loaded with Factor 4. These statements are (xvi) using MB is compatible with life style and (xvii) using MB is completely compatible with current situation. They can be labeled as '**compatibility**'. Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experience and needs of potential adopters (Roger 2003). A lack of compatibility in IT with individual needs may negatively affect the individual's IT use (sherry, 1997; Mckenzie, 2001).

#### **Factor 5**

Statements 18 to 26 were highly loaded with Factor 5. These statements are (xviii) it is expected that people like to use MB, (xix) MB provides financial services, (xx) MB is financially secure, (xxi) operations performed are completed without any brokerage, (xxii) no worry about the security of MB, (xxiii) money transactions using MB was safe, (xxiv) the bank will keep customer's best interest in mind when providing MB services, (xxv) less expensive and (xxvi) easier than using computer. They can be labeled as '**intention to adopt mobile banking**'.

To reduce the possibility to getting wrong answer, attention needs to be paid to reliability and validity (Saunders and Thornhill, 2003). Hence the five factors were first tested for their reliability. Reliability and validity tests were conducted for all the constructs in the conceptual model. The reliability of the five constructs used in the study was carried out using Visual Partial Least Squares (VPLS) software. The reliability of the constructs refers to the accuracy with which the constructs repeatedly measure the same phenomenon within permissible variation. The composite reliability for internal consistency of the constructs was tested and was above 0.7. The Cronbach alpha

scores were found to be greater than 0.7 which is good reliability for social science research (Nunnally 1978), as Cronbach Alpha Scores should be at least 0.5 (Fornell and Larcker 1981). In Table-46 the average variance extracted scores (AVE) for all the constructs are greater than 0.5 indicating sufficient convergent validity.

**TABLE-46**

**RELIABILITY AND VALIDITY CONSTRUCTS**

<b>Constructs</b>	<b>Composite Reliability</b>	<b>AVE</b>	<b>Cronbach Alpha</b>
Perceived usefulness	0.87	0.544	0.84
Perceived ease of use	0.83	0.50	0.76
Attitude	0.90	0.69	0.85
Intention to adopt mobile banking	0.88	0.57	0.85
Compatibility	0.87	0.77	0.70

Source: Estimated based on field survey, 2013

In the current study, the four variables, viz., perceived usefulness, perceived ease of use, attitude and compatibility were found to have impact on the ‘intention to adopt mobile banking’. The following hypotheses were formulated.

H8: Perceived usefulness has a positive impact on the attitude to use mobile banking.

H9: Perceived ease of use has a positive impact on the attitude to use mobile banking.

H10: Attitude has positive impact on intention to use mobile banking.

H11: Compatibility has positive effect on the adoption of mobile banking.

**Correlation of the model constructs**

The correlation values were generated using VPLS software for the constructs in the model. The results of the correlation analysis are shown in the following Table-47.

**TABLE-47  
CORRELATION OF THE MODEL CONSTRUCTS**

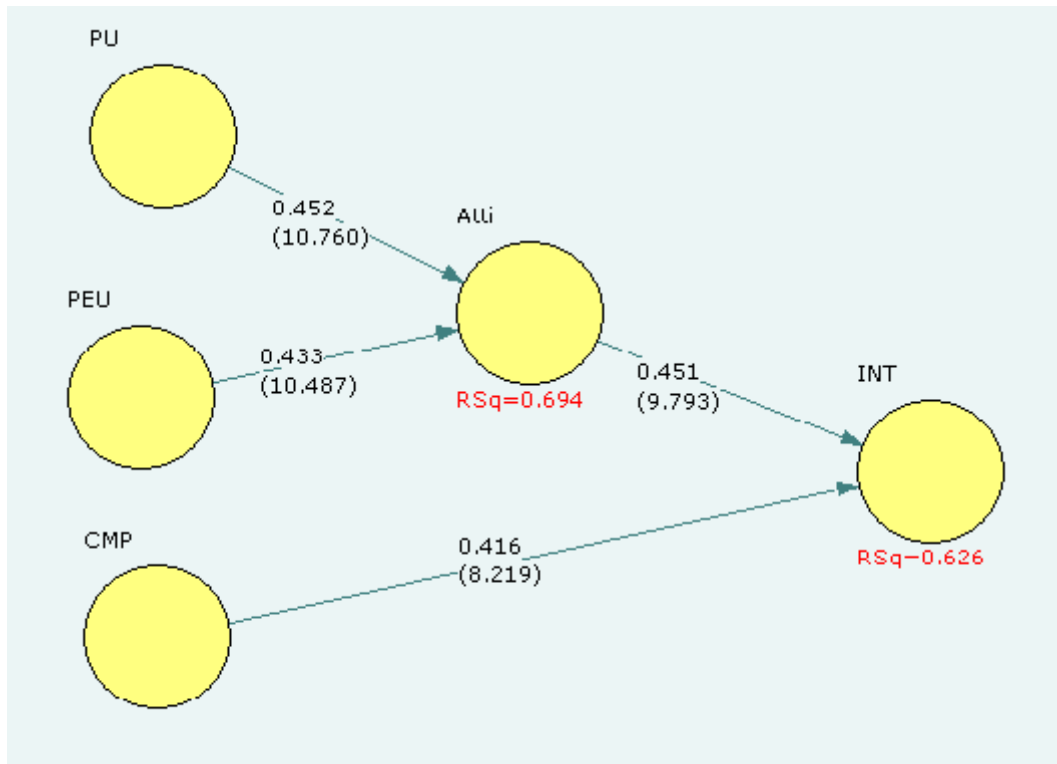
Constructs	Perceived usefulness	Perceived ease of use	Attitude	Intention to adopt mobile banking	Compatibility
Perceived usefulness	1				
Perceived ease of use	0.774	1			
Attitude	0.787	0.782	1		
Compatibility	0.645	0.674	0.661	1	
Intention to adopt mobile banking	0.684	0.831	0.727	0.715	1

Source: Estimated based on field survey, 2013

The correlation values among the constructs are greater than 0.6. Intention to adopt mobile banking has the highest correlation of 0.831 with perceived ease of use and compatibility has the lowest correlation of 0.645 with perceived usefulness.

With the five constructs the best fit of the model using VPLS Software is obtained and is given in the following Fig-14

#### INTENTION TO ADOPT MOBILE BANKING WITHOUT 'TRUST'



Figures denote standardised path coefficients. Figures in brackets denote their 't' statistic. PU-perceived usefulness, PEU-perceived ease of use, CMP-compatibility, Atti-attitude, INT-intention to adopt mobile banking

Fig-14

Significance for all paths were conducted using bootstrap resampling procedure. The test of each link is mapped to each path in the model. The estimated path coefficient along with their 't' statistic is shown in the model. All the paths are found to be significant and important in magnitude (Table-48)

**TABLE-48**

**STRUCTURAL MODEL- BOOTSTRAP**

Hypothesis	Standardized path coefficient	t- statistic
Perceived usefulness → Attitude	0.452	10.760
Perceived ease of use → Attitude	0.433	10.487
Attitude → Intention to adopt mobile banking	0.451	9.793
Compatibility → Intention to adopt mobile banking	0.416	8.219

Source: Estimated based on field survey, 2013

From the figure 'Attitude' is predicted by 'Perceived usefulness' ( $\beta = 0.452$ ) and 'Perceived ease of use' ( $\beta = 0.433$ ). These two constructs together could explain 69 percent of the total variance in 'Attitude'. The path between 'Perceived usefulness' and 'Attitude' was found to be significant ( $t = 10.760$ ), there by supporting hypothesis 8. This is consistent with the findings of Todd and Taylor (1995) who reported a significant relation between 'Perceived usefulness and 'Attitude'. In fact, 'Perceived usefulness' has the strongest effect with path coefficient of 0.452 emphasizing the important role of an individual's perceived usefulness in driving his attitude.

The path between 'Perceived ease of use' and 'Attitude' was found to be significant ( $t=10.487$ ), there by supporting hypothesis 9. This is consistent with the findings of Todd and Taylor (1995) who in their study reported a significant relation between 'Perceived ease of use' and 'Attitude'.

'Attitude' ( $t=9.793$ ) has significant effect on intention and there by supporting hypothesis 10. In fact, 'Attitude' has the strongest effect with a path coefficient of 0.45 emphasizing the important role of an individual's attitude in driving his intentions towards adoption of mobile banking. The findings were in consonance with the findings of Kalifa et al., (2003). But this is inconsistent with the findings of Todd and Taylor (1995) and Davis et al., (1989) who had found that there is no significant relation between 'Attitude' and 'Intention'.

'Compatibility' is consistently related to innovation adoption (Chen et al., 2000). Compatibility ( $t=8.219$ ) has significant effect on intention to adopt mobile banking there by supporting hypothesis 11. Compatibility also has impact with a path coefficient of 0.41 emphasizing the important role of an individual's compatibility in driving his intention towards adoption of mobile banking. The results support the findings of Chen (2008) and Schiertz et al., (2010). The model results depict that compatibility is able to explain 62.6 percent of the variations in the intention to adopt mobile banking.

The empirical results of the current study prove that 'attitude' and 'compatibility' are the main constructs in influencing the customers in their intention to adopt mobile banking. Where 'attitude' is influenced by 'perceived usefulness' and 'perceived ease of use'.

#### **4.11 Perceived risk and intention to adopt mobile banking**

Uncertainty is inherent in innovations and hence entails some degree of perceived risk. The theory of perceived risk has been applied by Pavlou (2001) who defined risk as the user's subjective expectation of suffering a loss in pursuit of a desired outcome. Perceived risk was first introduced in marketing research as an external variable in the study of innovation diffusion and adoption. In the earlier studies (Frambach, 1993, 1995; Ostlund 1974) it was proved that the speed of adoption is

negatively related to the level of perceived risk. The perceived risk surrounding an innovation might cause a potential adopter to postpone the decision to either adopt or reject the adoption. **Perceived risk refers to certain types of financial, product performance, social, psychological, physical, or time risks when consumers make transactions online** (Forsythe, 2003). Financial risk represents the financial loss in using mobile services, as consumers may perceive that reversing a transaction, stopping a payment after discovering a mistake, or refund may not be possible. Performance risk in mobile services is less satisfying than the non-mobile services, as consumers may perceive that mobile services cannot be used to complete a transaction when needed due to the denial of access to their account. Security risk is defined as a potential loss due to fraud or a hacker compromising the security of a mobile banking user. Time and convenience risk refers to a loss of time and any inconvenience incurred due to delayed payments or difficult navigation (Lee, 2009). Social risk refers to the possibility that using mobile banking may result in disapproval by one's friends/family/work group (Lee, 2009). This section studies the perceived risk of the respondents of the current research work on the adoption of mobile banking. Perceived risk is classified into five risks, viz , performance risk, financial risk, social risk, time risk and security risk. The respondents were asked to state their views on the types of risk that the customers have to meet while performing mobile banking activities in a five point rating scale as 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree', the scores assigned for this varying from 2 to -2 respectively. The obtained scores are given in the following Table-49

**TABLE-49**  
**AVERAGE SCORES ON RISK**

<b>usage of mobile banking</b> <b>Risk</b>	<b>Daily</b>	<b>Weekly</b>	<b>Twice in a month</b>	<b>Once in a month</b>	<b>Rarely</b>
Performance risk	-0.1276	-0.0438	0.2678	0.2978	0.1212
Financial risk	0.1489	0.1754	0.3660	0.4148	0.6969
Social risk	0.1063	-0.0964	0.3571	0.1702	0.3636

Time risk	0.2127	-0.0263	0.375	0.1808	0.4545
Security/privacy risk	-0.0851	-0.0701	0.1964	0.1276	-0.1212
<b>Perceived risk</b>	<b>0.0766</b>	<b>-0.0123</b>	<b>0.3125</b>	<b>0.2446</b>	<b>0.3030</b>

Source: Estimated based on field survey, 2013

The customers who use mobile banking were neutral in their views on risks associated with the usage of mobile banking; the average scores assigned on the various types of risks associated with mobile banking ranging from -0.1276 to 0.6969. Perceived risk which is the combination of five risks stated lies in the neutral region among the customers of the current study.

An attempt was made to find out how the intention to adopt mobile banking depends on the various risks discussed in the study. The following hypotheses were tested using ANOVA test.

Ho: Intention to adopt mobile banking is independent of performance risk/financial risk/

Social risk/time risk/security risk and perceived risk.

Ha: Intention to adopt mobile banking is dependent on the stated risks.

The results obtained are given in the following Table-50

**TABLE-50**  
**ADOPTION OF MOBILE BANKING AND RISKS**  
**ANOVA- TEST**

S.NO	Risk	Calculated F-value	Significance	Inference Ho
1	Performance risk	1.077	0.367	Accepted
2	Financial risk	1.830	0.122	Accepted
3	Social risk	3.414	0.009	Rejected
4	Time risk	1.284	0.276	Accepted
5	Security risk	2.283	0.060	Rejected
6	Perceived risk	5.359	0.000	Rejected

Source: Estimated based on field survey, 2013

From the calculated 'F' value, it is inferred that intention to adopt mobile banking is independent of performance risk, financial risk, time risk and is dependent on social risk and security risk. When perceived risk is observed by taking all the above five risks together, it is seen that intention to adopt mobile banking is not independent of perceived risk. The level of perceived risk is hence likely to influence the adoption of mobile banking. The findings were in consonance with the findings of Tashima Ismail and Khumbula Masinge (2010) in which Tommi Laukkanen et al (2007) reported that perceived risk is causing resistance among the majority of the respondents who use mobile banking.