

4.1 Summary statistics of Respondents

The sample group of this study consists of 279 respondents who are currently bank's account holders. The result shows that 53.4% of the total respondents belongs to the group who has adopted the mobile banking services, while 46.6% of the respondents belongs to the group who are not currently mobile banking users (Figure 4.1)

Figure 4.1
Percentage of mobile banking users

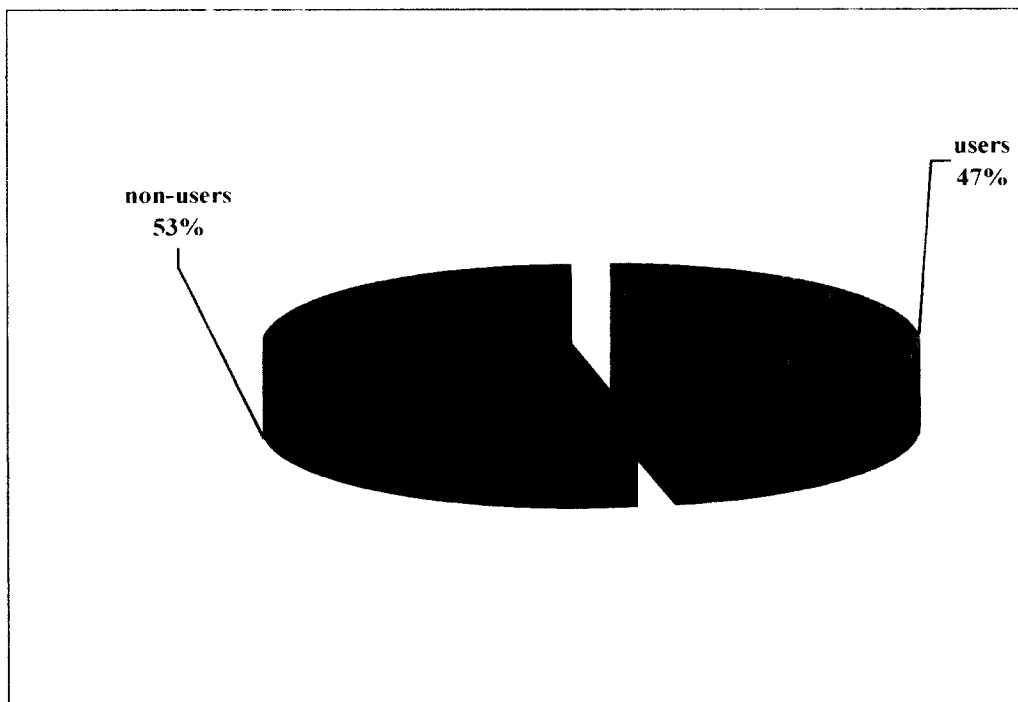


Table 4.1 shows the profiles of the respondents. 54.1% of the respondents are male, while 45.9% of the respondents are females. The respondents can be classified into 3 different groups based on their educational background. 57% of the respondents currently possess a degree. 18.6 % possess a master degree, 24.4% have a secondary school education. Out of 279 respondents, 1.1% earn below RM1500, 46.2% earn between RM1500 to RM3000, 42.3% earn between 3000 to RM5,000, and 10.4% earn

between RM5,000 to RM7,000. The respondents can be classified into 3 classes of age. The respondents who are between 21 years old to 30 years old has formed the biggest percentage (50.9%), while respondents who are between 41 years old to 50 years old has formed the smallest percentage (6.5%). 42.7% of the respondents are between 31 years old and 40 years old.

**Table 4.1
Demographic of Respondents**

	Frequency	Percentage (%)
Gender		
Male	151	54.1
Female	128	45.9
Education		
Level		
Secondary	68	24.4
Degree	159	57
Master Degree	52	18.6
Personal Income (RM)		
Below 1500	3	1.1
1500 - RM3000	129	46.2
3000 - 5000	118	42.3
5000 - 7000	29	10.4

Table 4.1 Continue

	Age	
21-30 years	142	50.9
31-40 years	119	42.7
41-50 years	18	6.5

4.2 Characteristics of Mobile Banking Users

The characteristics of mobile banking users are identified by examining the relationship between the demographic profile and mobile banking adoption. The study found the following:

1. Numbers of mobile banking adopters

Table 4.2 shows the numbers of mobile banking adopters and non-mobile banking adopters. From 279 respondents, 149 of them are mobile banking adopters while only 130 of them are non-mobile banking adopters.

Table 4.2
Numbers of mobile banking adopters

	Frequency	Percentage (%)
Mobile banking adopters	149	53.4
Non-mobile banking adopters	130	46.6
Total	100	100

2. Gender

Table 4.3 shows the relationship between the mobile banking adoption and gender. It was found that 70.5% of the total mobile banking adopters are males, while only 29.5%

of the sample is females. This finding is consistent with the previous research, which found males are more likely to consume technological innovation than females (Venkatesh, Morris, 2000).

Table 4.3
Relationship between Mobile Banking Adoption and Gender

Gender	Adopt Mobile Banking		Do not Adopt Mobile Banking		Total	
	Frequency	%	Frequency	%	Frequency	%
Male	105	70.5	46	35.4	151	54.1
Female	44	29.5	84	64.6	128	45.9
Total	149	100	130	100	279	100

3. Age

Table 4.4 illustrated the relationship between the mobile banking adoption and age. It appears that 59.1% of the respondents who adopt mobile banking services are between 21 to 30 years old. Only 0.6% of the sample that adopt mobile banking is between 41 to 50 years old. This implies that the mobile banking usage is more popular among younger consumers.

Table 4.4
Relationship between Mobile Banking Adoption and Age

Age Category (years)	Adopt mobile banking		Do not adopt mobile banking		Total	
	Frequency	%	Frequency	%	Frequency	%
21-30	88	59.1	54	41.5	142	50.9
31-40	60	40.3	59	45.4	119	42.7
41-50	1	0.6	17	13.1	18	6.5
Total	149	100	130	100	279	100

4. Level of Education

Table 4.5 represents the relationship between the mobile banking adoption and the level of education. It was found that from the total of 149 mobile banking adopters, only 1.3% of the sample have secondary education and below, while 26.2% of the sample hold master degree. The respondents who possess a degree formed the biggest percentage (72.5%) of people who have adopted mobile banking services. The result shows that mobile banking adopters are typically customers who have a high educational background. This is consistent with the previous research by Polatoglu and Ekin (2001).

Table 4.5
Relationship between Mobile Banking Adoption and Education Level

Education Level	Adopt mobile banking		Do not adopt mobile banking		Total	
	Frequency	%	Frequency	%	Frequency	%
Secondary and Below	2	1.3	66	50.8	68	24.4
Degree	108	72.5	51	39.2	159	57.0
Master Degree	39	26.2	13	10	52	18.6
Total	149	53.4	130	46.6	279	100

5. Income

Table 4.6 displays the relationship between income level and mobile banking adoption. It was found that the respondents who earned below RM1,500 adopt mobile banking, while 17.4% of the respondents who earn between RM5,000 to RM7,000 adopt mobile banking. The percentage of respondents who have adopted mobile banking is largest in the third income group category (52.3%). This implies that mobile banking adopters are among the high-income group of people. This finding is consistent with the previous research done by Matilla (2001).

Table 4.6
Relationship between Mobile Banking Adoption and Income Level

Income (RM)	Adopt mobile banking		Do not adopt mobile banking		Total	
	Frequency	%	Frequency	%	Frequency	%
Below 1,500	0	0	3	2.3	3	1.1
1500-3000	45	30.2	84	64.6	129	46.2
3000-5000	78	52.3	40	30.8	118	42.3
5000-7000	26	17.4	3	2.3	29	10.4
Total	149	100	130	100	279	100

6. Relationship between mobile banking adopters and demographic variables

The relationship (Table 4.7) between adopters and their demographic profile (gender, age, education level and income level) was tabulated and subjected to the Pearson's Chi-square test. Age, gender, income level and education level were found to have significant associations with mobile banking. This implies that there are higher levels of adoption among male, younger person, person with higher income and have higher education level.

Table 4.7
Relationship between mobile banking adopters and demographic variables

Relationship	Value	Asymp sig.	Significant
Mobile banking and gender	34.419	.000	Yes
Mobile banking and age	21.176	.000	Yes
Mobile banking and education level	92.806	.000	Yes
Mobile banking and income level	44.180	.000	Yes

4.3 Personal Innovativeness And Mobile Banking Adoption

The level of personal innovativeness of mobile adopters is further identified by examining the relationship between mobile banking adoption and personal innovativeness. 16 items was used in order to measure the level of personal innovativeness among mobile banking adopters. The study has found the following:

1. Pioneering characteristics

It can be observed that mobile banking adopters are eager to try new ideas, compared to non-mobile banking adopters. Table 4.8 illustrated that the mobile banking users the mobile banking users are more (M=4.1) eager to try new ideas than non-mobile banking users (M=2.91) (item 5). It also appears that mobile banking users tend to be the majority (M=3.99) of the group who firstly try new products in the community compared to the non-users group (M=2.65) (item 6). This implies that the mobile banking adopters tend to be people who have pioneering characteristics.

2. Attitude to change

Table 4.8 illustrated that mobile banking adopters have a favor attitudes towards change. This situation is illustrated by the higher mean scores (M=4.12) of mobile banking users compared to non-mobile banking users (M=2.85) on the arguments “I like to keep up with technological advances” (item 9). It also appears that non-mobile banking adopters are not ready to adopt new ideas, unless they are forced to

adopt it. This situation is illustrated by the higher scores of 3 items (item 12, item 15, item 16) among the non-mobile banking adopters.

3. Communication behavior

It can be observed that mobile banking adopters have greater exposure to mass media and often seek out information about innovations. It was found that the mobile banking users (M=4.21) often make an extensive use of commercial media and professional sources than non-mobile banking users (M=2.9) (item 10). It was also observed that mobile banking adopters (M=4.15) have more social participation than non-mobile banking adopters (M=2.9) (item 11).

Table 4.8
Relationship between Personal Innovativeness and Mobile Banking Adoption

No	Items	Mean Scores		Mean Differences
		Adopt mobile banking	Do not adopt mobile banking	
1	I like to be considered as a leader	3.88	3.11	0.77
2	My friends and neighbors often come to me for advice about new products and innovation	3.85	2.71	1.14
3	I often seek out the advice from friends regarding new product or innovation	3.77	3.29	0.48
4	I like to buy new and different things	4.07	2.85	1.22
5	I am eager to try new ideas.	4.1	2.91	1.19
6	I am usually among the first to try new products.	3.99	2.65	1.34
7	I have more self-confidence than others	4.01	2.88	1.13
8	I want to look a little different than others	3.95	2.83	0.12
9	I like to keep up with technological advances.	4.12	2.85	1.22
10	I often make extensive use of commercial media and professional sources in learning of new products.	4.21	2.9	1.31
11	I am a socially active person.	4.15	2.94	1.21
12	I have an old-fashioned taste and habits.	3.77	4.64	0.87
13	My social status is important part of my life.	4.11	2.75	1.36
14	It's very important to me to feel I am a part of a group.	4.15	2.98	1.17
15	I am only accepting and use new products because of economic necessity and social pressures.	4.0	4.49	0.49
16	I am a person who is "skeptical" about new ideas.	4.04	4.48	0.44

In addition, the average total scores of personal innovativeness for the mobile banking users were slightly higher (M=66.1) than the average total scores for non-mobile banking users (M=49.5). This implies that people with high level of innovativeness tend to adopt mobile banking services. This is consistent with the previous findings by Agarwal and Prasad (1998).

Table 4.9
Total Scores of Personal Innovativeness

	Mobile banking adoption	N	Mean	Std. Deviation
Total scores of personal innovativeness	Adopt	149	66.0537	7.81785
	Do not adopt	130	49.5077	11.41823

4.4 Level of Usage and Acceptance Among Mobile Banking Adopters

Table 4.10, illustrated the usage level of mobile banking services among mobile banking users. The study found that more than half of the users (59.1%) conduct mobile banking rarely and sometimes. Further analysis showed that 61% of the mobile banking users would increase the usage of mobile banking services in the future. The results implied that the mobile banking users are not conducting the mobile banking services for all the time; they only do it when they found that there is necessary, for example, when they are traveling. Besides that, the mobile banking users probably still in the trial stage.

Table 4.10
Level of usage and acceptance of mobile banking among mobile banking users

Items	Description	Frequency (n= 149)	Percentage (%)
Frequency of usage	Rarely	12	8.1
	Sometimes	76	51
	Often	40	26.8
	Very Often	21	14.1
Likelihood to increase the usage	Definitely will increase	54	36.2
	Probably will increase	17	24.8
	Might Increase	39	26.2
	Probably not increase	12	8.1
	Definitely will not increase	7	4.7

4.5 Innovation Attributes and Mobile Banking Adoption

The consumers' perceptions towards the mobile banking attributes are identified by examining the relationship between the respondents' perception towards the mobile banking and mobile banking adoption. The study found the following:

1. Relative Advantage

There are several advantages highlighted by the respondents, which is related to the value proposition of the wireless channels. The use of mobile phone as a mean to conduct banking transaction was seen as a convenience way by the mobile banking users. This situation can be observed by referring to the table 4.11 (item 3). The mean score for the item is 3.77, which is closed to 4. The use of mobile phone was seen as leaving one more freedom with regard to where the transaction is taking place (e.g from home, office, car and etc). Besides that, the mobile banking adopters also found that the use of mobile banking in financial transaction lead to economic advantages, where it was seen as more

cheaper. Clearly then, the adopters do recognized the significant benefits (accessibility, convenient and cost) from mobile banking.

2. Compatibility

The mobile banking adopters often referred to their busy lifestyle and inconvenient opening hours of branches as a motivator for them to adopt mobile banking services (item 9). Typically these people were also highly familiar with IT and communication technology, and thus felt more comfortable with the idea of using such system for banking (item 6). Consequently, the degree to which an innovative channel such as the mobile banking is compatible with the individual's past experience and values appear to have a significant impact on willingness to adopt. This situation could be illustrated by looking at the item 7 and item 8(table 4.11), where the mobile banking adopters are found to be compatible with the past related product such as mobile phone and Internet banking.

3. Complexity

It can be observed from table 4.11, that the mobile banking adopters perceived that the mobile banking service not complex. They describe it as simple and straightforward process (item 5). The perception of the complexity involved when conducting financial transaction through mobile banking inversely related with the user's experience with mobile devices. This can be illustrated by looking at the item 14 (table 4.11). The difficulty to remember the password and username becomes one of the issue that may inhibits the mobile banking users to conduct mobile banking transactions (M=3.09).

4. Observability

In this survey, respondents mentioned that they had gained information of mobile banking services mainly from marketing communication activities such as advertising (M=4.03), via personal selling activities (M=3.72), and from friends and relatives (M=1.95), (item 10,11,12,table 4.11). It can be observed that the mobile banking user group can be convinced of the mobile banking benefits more easily, as most of them gained information from advertisement (item 12). They need lesser personnel selling activities to be convinced. Besides that, they are also less likely to learn about the existence of the mobile banking users from friends and relatives. This is probably because the technology is considered new, and has not been accepted by majority of people.

5. Trialability

Table 4.11 illustrated that the mobile banking users (M=4.0) feel that there is no sufficient guidance (item 18) that can help them to try the service more. In addition, it also appeared that the mobile banking users are more (M=3.07) comfortable to adopt the mobile banking, if they are allowed to experiment with it, before actually subscribed to the service than the non-mobile banking users (M=2.17) (item 19). This implies that the trialability of mobile banking is an important attribute for the mobile banking users. This is consistent with Hoyer and McInnis (1997), who suggested that the importance of trialability depends on the type of innovator. For people who tend to adopt early, trialability may be very important, than people who adopt later, as they do not have wide reference to base the value of innovation.

6. Perceived Risk

Perceived risk is analyzed here in terms of risk of error and the security level of mobile banking services. The mobile banking users are found to be perceived a lesser degree of risks, largely in relation to their own ability to use the channel effectively. It can be observed from table 4.11, that the mobile banking users feel (M=1.01) lesser degree of unsecured to make transactions using the mobile banking services.

Table 4.11
Relationship between Innovation Attributes and Mobile Banking Adoption

No	Items	Mean scores	Std. Deviation
1	I feel that mobile banking is the efficient way to keep me updated with my account activities.	3.7718	0.74
2	I find that mobile banking services can save up my time as I do not have to visit the branch in order for me to conduct a banking transaction.	3.97	0.66
3	I find that mobile banking service is very convenient as I can access banking services from anywhere and anytime.	3.98	0.69
4	I find that by using mobile banking service I can save money, as it can replace the long telephone calls or internet connection with quick and inexpensive message.	4.21	0.59
5	I feel that using mobile banking service is quite simple and straight- forward process	4.13	0.59
6	I am highly familiar with IT and communication technology, and thus feel comfortable with the idea of using mobile banking.	4.22	0.54
7	I am used to internet banking, and I find that the way internet banking and mobile banking operated is similar, thus I do not feel any difficulty using it.	4.12	0.58
8	I am comfortable using mobile banking service, as I am familiar with mobile phone and it is always with me.	4.23	0.049
9	I lead a very busy and active lifestyle. To me, mobile banking service is very convenient as it suits my lifestyle	4.21	0.56
10	Recommendations from friends and relatives help me to see the benefits of mobile banking	1.95	0.41
11	The bank's personnel advices help me to realize the advantage of using mobile banking service	3.72	0.89
12	Information from advertising helps me to see the benefits of mobile banking.	4.03	0.8
13	I feel that using mobile banking service is secured	4.28	0.79
14	I am having general difficulties in using mobile phone.	2.05	0.4
15	I find that it is very difficult to remember the password and username.	3.09	0.41
16	I feel that it is difficult to use mobile banking service, as the process is quite confusing.	1.33	0.56
17	I find that mobile banking service facilitates the possibilities of typing error, as the keyboard is relatively small.	1.28	0.52
18	I feel that there is no sufficient guidance that can guide me.	4.0	0.08
19	I would feel more comfortable to adopt it if I get a chance to try it before I actually subscribe.	3.07	0.36
20.	I feel that the user interface for mobile banking is poor and complicated.	2.12	0.45
21.	I feel that some financial transactions are too important to be arranged over the mobile	2.01	0.14
22.	I feel that it is unsecured to make financial transactions on mobile phone, as there is a possibility of system malfunctioning.	1.01	0.16
23.	I feel awkward using the mobile banking service as I am not used to the information technology.	4.0	0.00

In addition, factor analysis was carried out in order to identify the underlying constructs factors that influence the adoption of mobile banking. Principal axis factoring was used, followed by varimax rotation with Kaiser Normalization. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.92) was well above the acceptable level of 0.5. Six factors are identified (figure 4.12):

1. Relative Advantage

First factor represents variables that constitute the mix items of mobile banking's relative advantage. It accounts for 31% of the total variance and is defined by 6 variables.

2. Complexity

The second factor accounts for 9.7% of the total variance, and is defined by 6 variables. Factor 2 appears to be defined mix of items that are related to the functional issues of the mobile banking. Mobile phone can be considered to some extent not to be designed for this type of services, for example; keyboard is relatively small, which facilitates of errors in typing.

3. Compatibility

Factor 3 represents variables that constitute the mix items of compatibility levels among the respondents. It accounts for 5.53% of total variance.

4. Observability

Factor 4 appears to be defined the mix of items that are related to the way the benefits of mobile banking are communicated to the consumers, and to what extent does it visible to the social system. It account for 5.3% of total variance.

5. Trialability

Factor 5 constitutes items of triablability, which accounts for 5.3% of total variance.

6. Perceived Risk

Factor 6, which includes items of the security and trustworthiness of mobile banking usage accounts for 4.79% of total variance.

Table 4.12
Factor Analysis

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
I feel that mobile banking is the efficient way to keep me updated with my account activities.	0.762					
I find that mobile banking services can save up my time as I do not have to visit the branch in order for me to conduct a banking transaction	0.690					
I find that mobile banking service is very convenient as I can access banking services from anywhere and anytime.	0.676					
I find that by using mobile banking service I can save money, as it can replace the long telephone calls or internet connection with quick and inexpensive message.	0.607					
I feel that using mobile banking service is quite simple and straight- forward process		0.672				
I find that it is very difficult to remember the password and username.		0.613				
I feel that it is difficult to use mobile banking service, as the process is quite confusing.		0.551				
I find that mobile banking service facilitates the possibilities of typing error, as the keyboard is relatively small.		0.538				
I am highly familiar with IT and communication technology, and thus feel comfortable with the idea of using mobile banking.			0.663			
I am used to internet banking, and I find that the way internet banking and mobile banking operated is similar, thus I do not feel any difficulty using it.			0.624			
I feel awkward using the mobile banking service as I am not used to the information technology.			0.427			
Information from advertising helps me to see the benefits of mobile banking.				0.751		
Recommendations from friends and relatives help me to see the benefits of mobile banking				0.654		
The bank's personnel advices help me to realize the advantage of using mobile banking service				0.653		
I would feel more comfortable to adopt it if I get a chance to try it before I actually subscribe.					0.526	
I feel that there is no sufficient guidance that can guide me to try the mobile banking services.					0.608	
I feel that it is unsecured to make financial transactions on mobile phone, as there is a possibility of system malfunctioning.						0.599
I feel that some financial transactions are too important to be arranged over the mobile phone.						0.497
Total Variance Explained	31	9.7	5.53	5.3	5.12	4.79

4.6 Summary of Research Results

1. Profile of Typical Mobile Banking Users

Academic research has been interested in examining socio-economical factors (demographics, psychographics) of consumers adopting new technologies. According to Polatoglu and Ekin (2001) demographic factors that describe typical electronic banking customers include young, affluent and highly educated. Interestingly, results from this study indicate that the average mobile banking user's demographic factors are slightly different from that Internet banking users. Gender seemed to have an impact on mobile service usage; there were 70.5 % men in the user group. A user of mobile banking belonged most often to age group 21 to 30 years old. Majority of the mobile banking users were 21 to 30 years old, while the non-users were relatively older compared to the majority group. About 61.6% of the respondents who earned between RM5,000 to RM7,000 belongs to the user group of mobile banking services. About 75% of the respondents who possess master degree belongs to the user group of mobile banking services. To conclude, a typical user of mobile banking services is male, age 21 to 30 years old, earn higher-income, and have higher education.

2. Personal Innovativeness and Mobile Banking Adoption

Agarwal and Prasad (1998) postulated that individuals with higher level of innovativeness in the domain of information technology are expected to develop more positive perception about the innovation in terms of advantage, ease of use, compatibility, and therefore have higher intentions towards the adoptions of new technology.

The result of this study, has found that there is a relationship between the personal innovativeness and the adoption of mobile banking services: the consumers who scores high on personal innovativeness are belong to the group of people who are currently a mobile banking user. This group of people usually are eager to try new ideas. This interest leads them out of local circle of peers and into more cosmopolite social relationships. The typical users of mobile banking who scores high on personal innovativeness also belongs to the group of people who are able to absorb the possible loss due to an unprofitable innovation and have an ability to understand and apply complex technical knowledge.

3. Innovation Attributes and Mobile Banking Adoption

a) Relative Advantage

Relative advantage is concerned with the degree to which an innovation is perceived as being better than the idea it supersedes. In the case of mobile banking, the findings show that the value of mobile banking arising from the mobile value of the mobility of the service. This study also found that the adopters of mobile banking are clearly recognized the benefits of mobile banking

b) Complexity

The perception of complexity involve when conducting financial transactions via mobile channel is often inversely related to a consumer's experience with technology in general. In Malaysia, the usage of Internet and mobile phone has already diffused to masses of consumer; it can be argued that Internet and mobile phone is sort of related technology to the mobile banking. The study found that the consumers who are having difficulties with the previous related technology: mobile phone tend to avoid adopting mobile banking. The issue of

complexity arrived from the functionality of the mobile phone, which is not suitable for banking transactions (size of the keyboard which is small).

c) Compatibility

The degree to which an innovative channel such as a mobile device is compatible with the individual's past experiences and values appears to have a significant impact on willingness to adopt. Respondents who belong to the group of mobile banking users tend to belong to the group of internet banking users, thus making them feel comfortable in using mobile devices to conduct banking transactions. Besides that, they are also highly familiar with the ICT.

d) Observability

Observability of an innovation describes the extent to which an innovation is visible to other members of a social system, how easily the benefits can be observed and communicated (Rogers, 1995). The lack of physical domain in service products may present some problems, even though in this case the service delivery medium, mobile phone itself, may enhance the physical evidence of the innovation. The study has found that the benefits of mobile banking can be easily observed by the mobile banking adopters

e) Trialability

Rogers (1995) argues that potential adopters who are allowed to experiment with an innovation will be more willing to adopt an innovation. The study has found that the trialability is an important attribute for the mobile banking users. This is probably because they do not have wide reference to base the value of innovation compared to non-adopters, which tend to adopt later.

e) Perceived Risk

Security and trustworthiness is important in financial services. The study illustrated that the mobile banking users perceived a lesser degree of risk maybe due to their own ability to use the channel effectively.