Results, Finding and Discussion

167 responses were recorded. 17 responses were not usable because there were incomplete. The response rate is about 83.5%.

4.1 Demographic Analysis

The questionnaire included questions to determine the demographic profile of the respondents of the study. Information on age, gender, income group, occupation, education, religion and race were gathered. Demographics of the respondents were analyzed and summarized in Table 4.1.

Table 0.1: Demographic of Respondents

Profile	Category	Frequency	Percentage (%)
Gender	Male	77	51
	Female	73	49
Age	26-30 years old	58	39
	31-35 years old	56	37
	36-40 years old	25	17
	Above 41 years old	11	7
Race	Malay	55	37
	Indian	17	11
	Chinese	70	47
	Others	8	5
Religion	Muslim	59	39
	Hindu	16	11
	Buddhist	49	33
	Christian	25	17
	Others	1	1
Income Group	< RM 1,000	5	3
	RM 1,000 - RM 2,500	4	3
	RM 2,500 - RM 5,000	43	29
	RM 5,000 - RM 7,500	47	31
	RM 7,500 - RM 10,000	30	20
	> RM 10,000	21	14
Education	Degree	96	64
	Postgraduate	54	36
Occupation	Students	13	9
	Unemployed	1	1
	Self-Employed	2	1
	Clerical	3	2
	Executive	53	35
	Managerial	55	37
	Top Management	7	5
	Professional	14	9
	Others	2	1

The demographic data revealed a few characteristics of the respondents. Table 4.1 shows the gender distribution of the respondents where 51% (n=77) are male and 49% (n=73) are female. The gender distribution is equally distributed between males and females. Therefore, there is no bias in terms of gender of the respondents.

From the age profile of the respondents (Table 4.1), 39% (n=58) were age between 26-30 years old, 37% (n=56) between age 31-35 years old, 17% (n=25) between 36-40 years old and 7% (n=11) for age more than 41 years old. The respondents consisted mainly of those from the age group of 26 to 35 corresponding to common age for people to pursue post graduate studies. The age groups were made up of individuals from the commonly known Generation X and Generation Y whom are known to be familiar with communications, media, and digital technologies. Therefore, the respondents were expected to be capable to adopt the WiMAX technology, making them suitable subjects to study the factors affecting WiMAX adoption.

Education profile of the respondents (Table 4.1), 64% (n=96) of the respondents were degree holders and 36% (n=54) possessed postgraduate education. Since the target respondents for this study are University Malaya Master of Business Administration students, therefore, it was expected that they belong to these two groups of education level.

Table 4.1 also shows the race of the respondents. 37% (n=55) were Malays, 11% Indians (n=17), 47% Chinese (n=70) and the remaining 5% of the respondents were of other races. Figure 4.5 shows the religion distribution of the respondents. 39% (n=59) of the respondents are Muslim, 11% are Hindus (n=16), 33% are Buddhist (n=49), 17 are Christians (n=25) and one respondent was of other religion. Most of the respondents were Chinese of Buddhist or Christian religion whereas Malays came second with 55 persons out of 150 respondents. Malays and Chinese made up the majority of the respondents. This was evident as Malays and Chinese are the majority of the population in Malaysia. However,

there were people from all races among the respondents and therefore we can conclude that the current study gathered data from people from a various cultural backgrounds.

Income group profile of the respondents (Table 4.1), 3% (n=5) has income less than RM 1,000, 3% (n=4) earns between RM 1,000 – RM 2,500. 29% (n=43) are in RM 2,500 – RM 5,000 income group, 31% (n=47) are in RM 5,000 – RM 7,500 group, 20% (n=30) earns between RM 7,500 – RM 10,000 and lastly 14% (n=21) of the respondents earns more than RM 10,000 per month. Majority of the respondents in the current study were from the middle to high income earning group. Therefore, we postulated that the respondents should be among the group of people who has access to the latest information technology and possessed the ability to adopt a new technology like WiMAX.

Table 4.1 shows the occupations of the respondents. 9% (n=13) of the respondents are still students, 1% Unemployed (n=1), 1% Self-Employed (n=2), 2% were involved in Clerical work (n=3), 35% are Executives (n=53), 37% for Managerial level (n=55), 5% for Top Management (n=7), 9% are Professional (n=14) and 2 of the respondents (2%) are of other occupation than stated. The occupations as stated by the respondents once again confirmed our postulation as majority of them were made of executives, managers, top management officers and professionals.

4.2 Normality Test

Normality tests were first performed to ensure the various variables of empirical data is suitable for analysis before statistical analysis was embarked. Histogram, stem and leaf, skewness and kurtosis were analyzed and all data collected were noted to be in normal distribution (Table 4.2). Of all the variables in the measurement model, skewness values range from -0.685 to 0.598 with a mean of -0.216, kurtosis values range from -0.818 to 0.548, with a mean of -0.1366 (Table 4.2). The absolute values of skew indexes greater

than 3.0 and absolute values of the kurtosis indexes greater than 8 are indications of extreme cases of violating normality assumption (Kline, 1998). The present data set was noted to be in the tolerable range for non-severe violation. Therefore, Structural Equation Modeling (SEM) procedures assuming multivariate normality were followed.

4.3 Reliability Test – Cronbach Alpha

Reliability of the empirical data was determined by using Cronbach Alpha. Cronbach alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer the Cronbach alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale. As shown in Table 4.2, Cronbach Alpha value for Intention to adopt WiMAX is 0.934, perceived usefulness is 0.939, perceived ease of use is 0.895, social influences is 0.944 and personal innovativeness toward information technology is 0.871. Therefore, for the five variables, Cronbach Alphas were closed to 1. Therefore it was concluded that Cronbach alpha results for all the variables were considered good and that the data set had high reliability.

Table 0.2: Instrument Reliability and Validity

	Mean	Std. Deviation	Factor Loading	Variance	Skewness	Kurtosis	Cronbach Alpha
Intention to adopt WIMAX							**0.94**
InToAdp1	4.78	1.54	n/a	2.37	-0.61	-0.30	
InToAdp2	4.87	1.49	n/a	2.22	-0.40	-0.33	
Perceived Usefulness (PU)							**0.94**
PU1	4.66	1.54	0.79	2.36	-0.44	-0.34	
PU2	4.78	1.43	0.86	2.05	-0.19	-0.82	
PU3	4.69	1.38	0.92	1.91	-0.33	-0.57	
PU4	4.80	1.27	0.87	1.62	-0.31	-0.37	
PU5	4.99	1.33	0.88	1.76	-0.48	-0.29	
PU6	4.87	1.33	0.80	1.76	-0.51	0.27	
Perceived Ease of Use (PEOU)							**0.90**
PEOU1	4.54	1.32	0.83	1.75	-0.69	0.55	
PEOU2	4.55	1.19	0.77	1.42	-0.54	0.06	
PEOU3	4.54	1.29	0.86	1.66	-0.63	0.20	
PEOU4	4.65	1.24	0.84	1.53	-0.54	0.46	
Social Influences (SI)							**0.94**
SI1	3.35	1.30	0.83	1.69	0.04	-0.08	
SI2	3.11	1.38	0.91	1.90	0.53	0.08	
SI3	2.91	1.40	0.92	1.96	0.60	-0.24	
SI4	2.88	1.42	0.88	2.03	0.57	-0.12	
SI5	2.99	1.38	0.87	1.91	0.58	0.09	
Personal Innovativeness Toward Information Technology (PITIT)							**0.87**
PITIT1	4.91	1.23	-0.76	1.51	-0.42	-0.06	
PITIT2	4.33	1.52	-0.86	2.30	-0.19	-0.80	
PITIT3	4.80	1.39	-0.89	1.92	-0.37	-0.13	

4.4 Confirmatory Factor Analysis - Measurement Model

With the high reliability scores (closed to 1) from the Cronbach alpha values, the five constructs in the model were believed to have very good internal consistency. Confirmatory Factor Analysis (CFA) measurement model was then used to check the model fit and convergent validity of each construct in the proposed model. This CFA model allowed each construct to correlate freely with every other construct with no causal relationships specified between the latent constructs. The measures used to assess model fit include Chi square, degree of freedom, the $\chi 2$/df ratio, Normed Fit Index (NFI), Tucker-Lewis Index (TLI, equivalent to Non-Normed Fit Index), Comparative Fit Index (CFI), Root Mean Square Residual (RMSR), and Root Mean Square Error of Approximation (RMSEA). All the other criteria met the recommended level (Chisquare/df=2.180, NFI=0.908, IFI=0.948, TLI=0.929, CFI=0.947, RMSEA=0.058) for a reasonably good fit.

Convergent validity, is the degree to which an operation is similar to (converges on) other operation that it theoretically should also be similar to. We empirically assessed convergent validity by examining the factor loadings and the relevant p values. The important descriptive statistics and correlations are listed in Table 4.2. According to the common rule of loading, accepted value is greater than 0.50 (Kline, 1998). Thus, the desired convergent validity of the constructs in the current study was believed to have been achieved.

According to Kline (1998), the estimated correlations of the factors that underlie sets of indicators supposed to measure different constructs should not be excessively high (>0.85) or excessively low (<0.10) in order to demonstrate discriminant validity. The correlation estimates between the associated constructs are as shown in Table 4.3. The correlation estimates values exhibit that none of the values exceeds these limits. Thus, the

current CFA model reflected an acceptable level of discriminant validity. So far the construct validity of the proposed model was supported.

Table 0.3: Inter-construct Correlations as Discriminant Validity

	Intention To Adopt WiMAX	Perceived Usefulness (PU)	Perceived ease of use (PEOU)	Social Influences (SI)	Personal Innovativeness towards Information Technology (PITIT)
Intention to adopt WiMAX	1.000				
Perceived usefulness (PU)	0.747	1.000			
Perceived ease of use (PEOU)	0.701	0.667	1.000		
Social Influences (SI)	0.465	0.426	0.513	1.000	
Personal Innovativeness towards Information Technology (PITIT)	0.294	0.279	0.171	0.126	1.000

Note: All the correlation values are significant at p-value of 0.000

4.5 Model Fits Analysis

The measures used to assess model fit include Chisquare, degree of freedom, the $X2/df$ ratio, Normed Fit Index (NFI), Tucker-Lewis Index (TLI, equivalent to Non-Normed Fit Index), Comparative Fit Index (CFI), Root Mean Square Residual (RMSR), and Root Mean Square Error of Approximation (RMSEA). Generally, there is no single variable to determine the goodness of fit of the model. Hu and Bentler (1999) provided in their study rules of thumb for deciding which statistics to report and choosing cut-off values for declaring significance. All the measures in the current study met the recommended level (Chisquare/df= 2.9, NFI=0.988, IFI=0.884, TLI=0.922, CFI=0.992, RMSEA=0.112 close to 0.06) for a reasonably good fit (Appendix E).
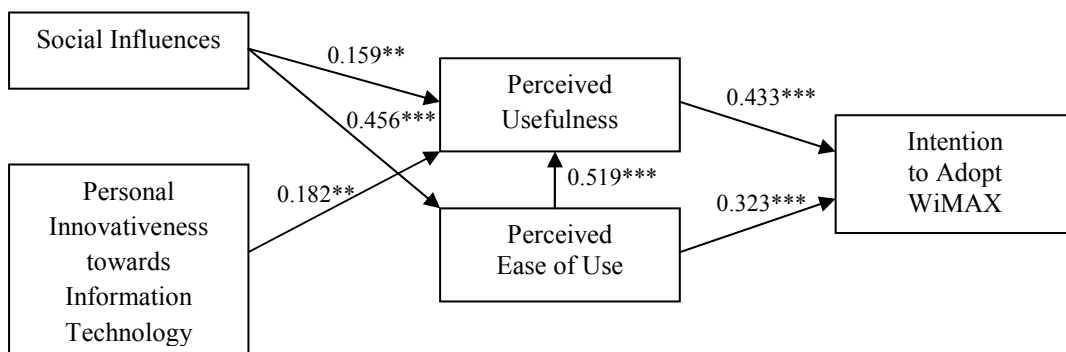
4.6 Hypothesis Testing

Table 0.4: Hypothesis Testing Results

Hypothesis	Path	Path Coefficient	*P*-Value	Remarks
H_1	PU <-- SI	0.159	0.024**	Supported
H_2	PEOU <-- SI	0.456	0.000***	Supported
H_3	InToAdp <-- SI	0.088	0.161	Not Supported
H_4	PU <-- PITIT	0.182	0.004**	Supported
H_5	PEOU <-- PITIT	0.066	0.365	Not Supported
H_6	InToAdp <-- PITIT	0.075	0.185	Not Supported
H_7	InToAdp <-- PU	0.433	0.000***	Supported
H_8	InToAdp <-- PEOU	0.323	0.000***	Supported
H_9	PU <-- PEOU	0.519	0.000***	Supported

Note: **$p<0.05$, ***$p < 0.001$

The statistical significance of all the structure parameters was examined to determine the validity of the hypothesized paths. The hypothesis testing outcomes are summarized in Table 4.4. 3 hypotheses were not supported i.e. H_3, H_5 and H_6 while the others were supported i.e. H_1, H_2, H_4, H_7, H_8 and H_9.

4.7 Discussion

Note: **$p<0.05$, ***$p<0.001$

Figure 0.1: Path Coefficients and Hypothesis Test Result

The proposed conceptual model used in this study was mostly supported by the data in this study except for H_3, H_5 and H_6 as shown in the path analysis results (Figure 4.1).

Positive finding was found for Hypothesis 1, which is social influences have a direct positive impact on perceived usefulness (path coefficient=0.159, $p<0.05$). The results strongly supported the results by some other previous studies. Lu et al. (2005) also had the same positive finding in their study on adoption of wireless Internet services via mobile technology in a non-work setting. However, the results from the current study contradict with the results in the study by Lewis et al. (2003). They found that social influences via social norms have no direct impact on perceived usefulness. The factor social image was not included in their study. In the current study, the construct social influences was captured as a whole and not divided into the three interrelated social elements which are social norms, social image and voluntariness. However, the questions in the questionnaires clearly showed the elements social norms and image were captured leaving behind the element of voluntariness. The differences in the definition and inclusion of the construct social influences that are captured in the previous studies and in the current study can possibly explain the variable results that were gathered and concluded in the studies. In our study, social influences indeed have direct impact over perceived usefulness of WiMAX.

As for Hypothesis 2, the current study also supported the fact that social influences have positive impact to perceived ease of use (path coefficient 0.456; $p<0.001$). This clearly demonstrates that internalization of social influences and sense of social status and image among friends also influence potential adopters' perception of how easy to it is to use WiMAX. The higher path coefficient also indicates that the influence is of higher magnitude compared to the effect of social influences on perceived usefulness. Lu et al. (2005) also found similar results. However, in their study, the magnitude of social influences on perceived usefulness was much higher than that of social influences towards

perceived ease of use. On the other hand, Lewis et al. (2003) failed to demonstrate this relationship in their study. Therefore, the results from the current study indicated that friends and important social acquaintances are critical determinants for potential adoption of WiMAX.

Hypothesis 3, social influences have positive impact to intention to adopt (path coefficient 0.088; $p>0.05$) was not supported. The results from the current study confirmed findings of Lu et al. (2005). They stated that when usage is not mandatory, subjective norms and sense of image seem to work through perceptions rather than intentions. Thus, potential adopters of WiMAX are most likely to decide on their behavior based on their sense of image and opinions from their friends and important people in their social network rather than follow blindly and for showing off in public or among friends. However, the element of voluntariness was not captured in the current study, therefore no conclusion was made of the effect of social influences on intention to adopt WiMAX will change if the setting of mandatory or voluntary was dictated. The negative effect of social influences towards intention to adopt was not supported in the study by Karahanna and Straub (1999) which found subjective norm is a significant determinant for intention to adopt.

Hypothesis 4, personal innovativeness toward information technology has positive impact on perceived usefulness (path coefficient 0.182; $p<0.05$) was supported in the current study. This personal trait of innovativeness has a positive relationship towards formation of perception of usefulness of WiMAX. The finding was in line with the results by Lu et al. (2005) which also found personal innovativeness towards information technology has a positive impact on perceived usefulness of wireless Internet services via mobile technology. However, in the current study the empirical data failed to demonstrate the positive impact of the construct personal innovativeness towards information technology over perceived ease of use and therefore Hypothesis 5 was not supported (path

coefficient 0.066; $p>0.05$). This result contradicted with the finding by Lu et al. (2005) which found personal innovativeness towards information technology has a positive impact over perceived ease of use. The magnitude of the impact in their study was even higher than the magnitude of the impact of personal innovativeness towards information technology over perceived usefulness as demonstrated by the higher path coefficient. The current result however is in line with the result demonstrated by Agarwal and Karahanna (2000) which also showed that the predictive effect of personal innovativeness towards information technology was not statistically significant over perceived ease of use. Therefore the empirical data in the current study clearly dictated that personal innovativeness have a positive impact on perceives usefulness but not towards perceived ease of use of WiMAX.

Personal innovativeness towards information technology is also found to have negative impact over intention to adopt WiMAX (path coefficient = 0.075; $p>0.05$) in the current study. Hypothesis 6 of the current study is therefore rejected. Therefore, the empirical data in the current study also failed to support the hypothesis that the construct personal innovativeness towards information technology have over intention to adopt. Previous study by Lu et al. (2005) also tried to demonstrate this relationship to no avail. They argued that, the situation can be explained that the participants of their study may tend to base their decision towards adoption of Wireless Internet Services via Mobile Technology more on rationality than pure curiosity and bravery because of the educational level of the sample. As the respondents of the current study are students of postgraduate level, we would expect them to be more adventurous in decision making, however, the data showed otherwise.

Both Hypothesis 7 and 8 were supported by the empirical data of the current study as expected. Therefore both perceived usefulness (path coefficient = 0.433; $p<0.001$) and

perceived ease of use (Path Coefficient = 0.323; $p<0.001$) have positive impact over intention to adopt WiMAX. The predictive power of perceived usefulness was higher than perceived ease of use as demonstrated by the higher path coefficient. The findings were also in line with that found of the impact of this two constructs over intention to adopt Wireless Internet Services via Mobile Technology by Lu et al. (2005). Therefore, the well educated lot of master students in Business Administration of University of Malaya place more emphasis on usefulness of WiMAX compared to ease of use of WiMAX in determining their adoption of the technology but will at the same time takes these two constructs into consideration when determining their adoption of WiMAX.

The final hypothesis (Hypothesis 9) of perceived ease of use has positive impact to perceived usefulness was supported (Path Coefficient = 0.519; $p<0.001$) in the current study. This strong support is highly significant as demonstrated by the path coefficient value and $p<0.001$. This finding is also the same as noted by Lu et al. (2005) which also find strong support for this particular hypothesis. Therefore, perceived ease of use of WiMAX will in turn have a positive perception of usefulness of WiMAX. This relationship also confirmed the findings in TAM and TAM2. The subjects in the current study indicated that if they perceived WiMAX to be easy to use, this will also lead them into perceiving the technology to be useful.

The highest path coefficient of Hypothesis 9 as compared to the other hypotheses as demonstrated in the current study demonstrated that perceived ease of use and perceived usefulness seemed to indicate that instrumental beliefs about WiMAX is more important than influences from social networks and personal innovativeness.