

Factors Affecting Students' Preference for using Wimax Service: A Case Study on Banglalion

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***Abstract:** WiMAX, the Worldwide Interoperability for Microwave Access, is an emerging telecommunications technology based on the IEEE 802.16 standard that provides wireless data at higher speed over greater distances in a variety of ways, from point-to-point links to full mobile cellular type access. This paper attempts to identify the factors that influence students' preference for using WiMAX service from Banglalion. Several diagnostic techniques such as binary logit model, factor analysis, multi-dimensional scaling (MDS) and conjoint analysis have been used in this study. The study concludes that Banglalion WiMAX should put more focus on high speed, initial price and more value added services. Besides, Banglalion should offer a package for the students that has more than 128kbps speed, 24 hours duration and monthly charge is Tk.300.*

***Keywords:** WiMAX, Students' Preference, Banglalion*

1. INTRODUCTION

WiMAX is the standards based technology that was developed in the early 2000, though we can say that its not mature enough as compare to other technologies for example; Wi-Fi, 3g GPRS. As the fourth generation (4G) of wireless technology, WiMAX delivers low-cost, open networks and is the first all IP mobile Internet solution enabling efficient and scalable networks for data, video, and voice. As a major driver in the support and development of WiMAX, Intel has designed embedded WiMAX solutions for a variety of mobile devices supporting the future of high-speed broadband on-the-go. WiMAX can provide broadband wireless access (BWA) up to 30 miles (50 km) for fixed stations, and

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3 - 10 miles (5 - 15 km) for mobile stations. In contrast, the WiFi/802.11 wireless local area network standard is limited in most cases to only 100 - 300 feet (30 - 100m). With WiMAX, WiFi-like data rates are easily supported, but the issue of interference is lessened. WiMAX operates on both licensed and non-licensed frequencies, providing a regulated environment and viable economic model for wireless carriers.

Bangladesh Internet service providers have over 1.0 million (10 lakh) subscribers and BTCL has about 30,000 internet users. Mobile phone and PSTN operators have approximately 5.0 million (50 lakh) Internet users. According to Grameen Phone 3.4 million subscribers access through handset and Edge Modem. The government is going to allow 170 more private firms to provide Internet connections. The government has given the licenses to three companies to launch WiMAX for providing the Internet service all over the country at a low cost. Banglalion WiMAX is one of them.

2. REVIEW OF LITERATURE

Customer preference may be defined as the power or ability to choose one thing over another with the anticipation that the choice will result in greater satisfaction, greater capability or improved performance (Schiffman, L., G., & Leslie L., K., 2002).

Customer preference analysis is really a call to action. By understanding the preference formation components and the preference expectation evaluations by group or segment of customers, companies can design response strategies that are truly responsive to vital customer expectations and that differentiate in the marketplace.¹

Consumer preference is influenced by purchasing behavior. When a consumer purchases a new product or service, this purchase would be considered a trial. Thus, a trial is the exploratory phase of purchase behavior in which consumer attempt to evaluate a product through direct use (Schiffman, L., G., & Leslie L., K., 2002).

The growth of the Internet notwithstanding, high-speed wireless Internet service has been slow to come to fruition since the widespread acceptance of the Internet. Only within the past few years have short-distance wireless networks such as IEEE 802.11 (commonly referred to as Wi-Fi networks) become a reality. Individual Wi-Fi access points have a range of roughly 70 feet for the highest data rates and a maximum range of about 300 feet (Broadcom Corporation ITERA, 2003, p. 106).

In *Wi-Fi Planet*, a popular web-based business and technology source for Wi-Fi promotion, Tim Sanders explains that the key conceptual differences between IEEE 802.11 (Wi-Fi) standards and IEEE 802.16 (WiMAX) standards boil down to size,

¹Developing Customer Insight: The Determination of Customer Preference. www.icrsurvey.com

scope, and scalability. Sanders explains that Wi-Fi standards are meant for small LANs, whereas WiMAX standards are meant for metropolitan area networks (MANs) that could be city-wide. While the exact size limitations of WiMAX are, as yet, theoretical, few debate that WiMAX will have far greater reach and scope than Wi-Fi (Sanders, 2005).

One advantage is WiMAX's technological superiority. Another advantage is that open standardization and system "interoperability" are key components in WiMAX's design. Unsurprisingly, one of the leading drivers of the WiMAX Forum to borrow a page from Wi-Fi's success and "to ensure interoperability of IEEE 802.16 implementations... following the successful example of the Wi-Fi Forum" (Hazen, 2005).

Essentially, WiMAX supported only line of sight transmission because of its relatively low frequency range (over 10 GHz) where penetration of obstacles is not possible (Sanders, 2005). Today, people have more concerns about security, privacy and hacking than they did with early wireless networks (Ryan, 2005). At a similar frequency, in a similar environment, WiMAX will not be that different to other modern modulations, such as (HSDPA) High-Speed Downlink Packet Access" (Conti, 2005).

As Mark Hazen notes, WiMAX will "steal significant market share from wireline-based competitors" only if its price is appropriate for local ISP markets (2005). A key benefit of WiMAX is the ability to provide high-speed Internet service to rural areas that currently have access to only low-speed dialup or expensive proprietary options (Cross, Orthman, and Browne, 2005). Louis Frenzel is correct in pointing out that "WiMAX is sure to find a niche" (2005 p. 58). Mo Shakouri, vice president of marketing for the WiMAX Forum explains, "[b]y adding mobility to WiMAX, it would be a unique capability to complement DSL and compete with DSL" (Luna 2005, p. 3). As Shakouri further notes, WiMAX will compete with cable/DSL by providing mobility in addition to a high-speed connection (Luna 2005, p. 3).

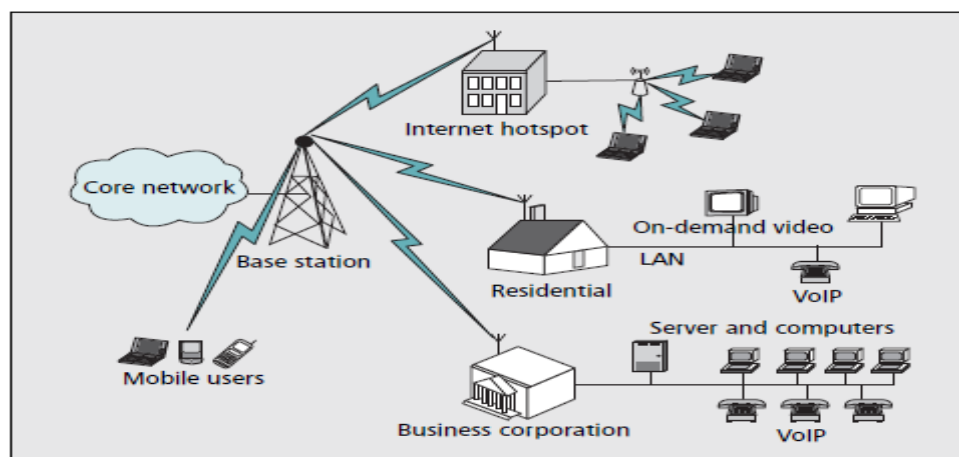
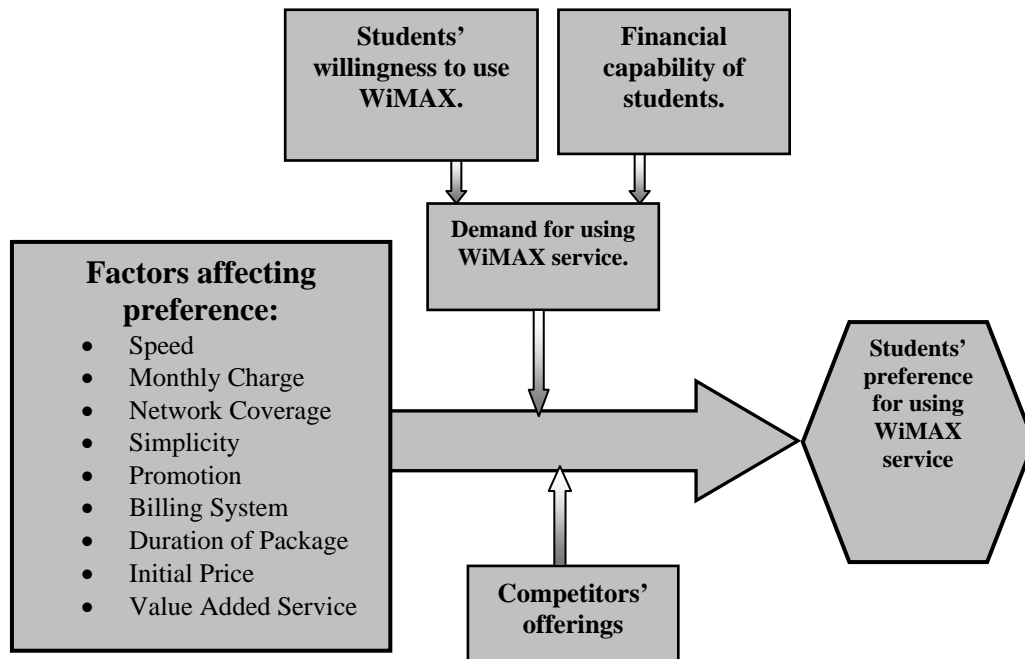


Figure 1: Potential WiMAX Scenario (Source: IEEE Communications Magazine p.74)
 WiMAX can be used for wireless networking in much the same way as the more common WiFi protocol. WiMAX is a second-generation protocol that allows for more efficient bandwidth use, interference avoidance, and is intended to allow higher data rates over longer distances. WiMax provides a focal point for consumers, service providers, manufacturers, analysts, and researchers who are interested in WiMAX technology, services, and products. Soon, WiMAX will be a very well recognized term to describe wireless Internet access throughout the world. Based on the above literature we have developed a conceptual model that contains the factors affecting students' preference for using WiMAX service.



Source: Authors Construct (Figure 2)

3. OBJECTIVES OF THE STUDY

Based on the secondary literature survey, expert's opinions and consumers' requirements, the broad and the specific objectives of the research have been set. The broad objective of the study is to identify and measure factors affecting the students' preference for using Banglalion WiMAX service. The specific objectives are:

- To determine the service attributes (factors) of WiMAX

- To determine the most important attribute of WiMAX.
- To measure the strength of relationship among the variables.
- To develop relative position map using Multi Dimensional Scaling (MDS) showing the relative positions of the brands in customers mind.
- To develop best marketing strategies to gain competitive advantage.

4. METHODOLOGY

Data Collection: There will be two-stage research. At the first stage, the identification of factors affecting students' preference for using Banglalion WiMAX services was done based on adopting certain exploratory research methods such as secondary data analysis, literature review and expert surveys. The experts surveyed include Bangladesh Telecommunication Company Limited (BTCL), high officials from telecommunications sector. Then, descriptive research will be conducted to describe the characteristics of Internet users (students) and to make predictions about Internet use (Banglalion WiMAX services).

A total number of 100 students were selected for samples by using probability sampling technique that is *Simple Random Sampling Technique*. Various Public and Private Universities were considered as sampling units and Students whose use internet services were considered as sampling elements. The universities registered lists of students were used as the sampling frame.

A structured questionnaire was administered through personal interview and the information needed for this research is factors affecting students' preferences of Wimax services. A draft questionnaire was prepared for data collection. Rank order scale and 9 point Likert scale were used in this questionnaire. The originally developed questionnaire is pre-tested in order with few dummy respondents to ensure the quality of the questionnaire in terms of preciseness, conciseness, objectivity and understandability of the questions. 5 fieldworkers participated in the data collection activity. The author is responsible for the validation of the fieldwork conducted. Moreover the survey has been conducted in between 1st October to 30th October 2009. Within the allocated time and resources, there are a few limitations to the study namely unavailability of related reports, unavailability of secondary data. Respondents are not aware about the WiMAX service, so the response they put is not so professional. It covers a limited place in Dhaka city.

Data Analysis: The collected data were tabulated on the computer and the final analysis was performed on statistical software (SPSS). Four types of analyses were carried out:

Binary Logit Model: Data will be analyzed using Binary Logit analysis. The binary logit model commonly deals with the issue of how likely an observation are to belong to each group. It estimates the probability of an observation belonging to a particular group. Dependent variable is student's preference. We consider respondents will prefer or not prefer the product. One outcome is preference another is no preference. Binary digit 1 indicates consumer preference and 0 indicates consumers no preference. The probability of success may be modeled using the Binary logit model as:

$$\log_e(P/1-P) = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6$$

Where,

P = probability of success.	a = parameter to be estimated
X ₁ = Speed	X ₄ = Simplicity
X ₂ = Network Coverage	X ₅ = Promotion
X ₃ = Billing system	X ₆ = Value added service

Factor Analysis: This study was applied to reduce data on a large number of variables into a relatively small set of factors and to identify key constructs underlying the original set of measured variables. The Factor model may be represented as:

$$X_i = A_{i1}F_1 + A_{i2}F_2 + A_{i3}F_3 + \dots + A_{im}F_m + V_iU_i$$

Here, V₁ = Student want more speed when using Internet.

V₂ = WiMAX coverage is more attractive for new user.

V₃ = Students want more value added service

V₄ = Students want to pay low monthly Charge.

V₅ = Billing system is simple.

V₆ = Everyone wants promotional activities.

Multidimensional Scaling: The purpose of this study is to identify key dimensions or factors underlying students' preference for using WiMAX service form Banglalion and therefore it determined the relative positions of the objects (internet service providers) in multidimensional space.

Conjoint Analysis: This study worked to derive utility values that students implicitly assign to various levels of key attributes used in evaluating preference for using WiMAX service form Banglalion. The basic conjoint analysis model may be represented by the following formula:

$$U(X) = \sum_{i=1}^m \sum_{j=1}^{k_i} \alpha_{ij} x_{ij}$$

Where

$U(X)$ = overall utility of an alternative

α_{ij} = the part-worth contribution or utility associated with the j th level ($j_1 = 24$ hours, $j_2 = 9$ hours, $j_3 =$ more than 128 kbps, $j_4 = 128$ kbps, $j_5 =$ Tk. 600, $j_6 =$ Tk. 300) of the i th attribute ($i_1 =$ duration of the package, $i_2 =$ speed, and $i_3 =$ monthly charge)

k_i = number of levels of attribute i ($i = 2$)

m = number of attributes ($m = 3$)

$x_{ij} = 1$ if the j th level of the i th attribute is present

= 0 otherwise

The importance of an attribute, I_i , is defined in terms of the range of the part-worth, α_{ij} , across the levels of that attribute:

$$I_i = \{ \max (\alpha_{ij}) - \min (\alpha_{ij}) \}, \text{ for each } i$$

The attribute's importance is normalized to ascertain its importance relative to other attributes, W_i :

$$W_i = \frac{I_i}{\sum_{i=1}^m I_i}$$

so that

$$\sum_{i=1}^m W_i = 1$$

5. RESULTS & INTERPRETATIONS

5.1 Results of Binary Logit Analysis:

Here the purpose is to estimate the probability of a students being strong preference of using WiMAX service from Banglalion as a function of six independent variables: Independent variables are speed, network coverage, billing system, promotion, and simplicity of the service, value added service. Here dependent variable is customer preferences of purchasing Wimax. Binary digit 1 indicates consumer preference and 0 indicates consumers no preference.

Table -1: Logistic Regression

Dependent Variable Encoding

Original Value	Internal Value
Yes	1
No	0

Table -2: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	48.092	.346	.461

From the above table (table-2), we can see the values of Cox & Snell R Square and Nagelkerke R Square are 0.346 and 0.461 respectively which indicating a less reasonable fit of the model to the data. This can be further verified by the classification table.

Table -3: Classification Table (a)

		Observed		Predicted		
				Preference to		Percentage Correct
				Yes	No	
Step 1	Preference	Yes		38	12	76
		No		12	38	76
		Overall Percentage				76

a. From the classification table, we can see that 76 out of 100, that is, 76% of the cases, are correctly classified.

Table -4: Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp (B)
Step 1(a)	SPEED	.663	.213	9.690	1	.002	.515
	COVERAGE	.061	.195	.099	1	.753	1.063
	BILLING	.362	.206	3.082	1	.079	1.437
	SIMPLE	.639	.313	4.179	1	.041	1.895
	PROMOTIO N	-.005	.426	.000	1	.990	.995
	VAS	.755	.469	2.595	1	.107	2.128
	Constant	-8.669	6.856	1.599	1	.206	.000

a Variable(s) entered step 1 Speed, Coverage, Billing, Simple, Promotion, VAS

The significance of the estimated co-efficient is based on Wald's statistic. Here, both speed and simplicity are significant at the level of .05 (table-4). Wald's score value of

Speed is 9.690 which is the highest score among independent variables. We note that speed of the WiMAX service is most significant in explaining students' preference. The positive sign for the coefficient indicates that positive student's preference of using WiMAX service. Organization should highlight Speed, as respondent perceive it most important. On the other hand, organization should also consider Network coverage, Billing System and Promotional activities, although they are not significant.

5.2 Results of Factor Analysis:

Factor analysis is usually conducted to reduce the number of attributes or variables used in the research. Each factor includes only those attributes, which are correlated with each other. But the factors extracted are not correlated with each other. The hypothesis used in factor analyses is that each variables or attributes are perfectly correlated with it but has no correlation with other variables. If this hypothesis is not accepted, factor analysis can be possible. In our research, to conduct the factor analysis, we have used *principle component analysis*. Principal component analysis is recommended when the primary concern is to determine the minimum number of factors that will account for maximum variance in the data for use in subsequent multivariate analysis.

Table- 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.660
Bartlett's Test of Sphericity	Approx. Chi-Square	111.314
	df	15
	Sig.	.000

Extraction Method: Principal Component Analysis.

Table -6: Communalities

	Initial	Extraction
v1	1.000	.926
v2	1.000	.723
v3	1.000	.894
v4	1.000	.739
v5	1.000	.878
v6	1.000	.790

Extraction Method: Principal Component Analysis.

Table -7: Initial Eigenvalue

FACTOR	EIGENVALUE	% OF VARIANCE	CUMULATIVE %
1	2.731	45.520	45.520
2	2.218	36.969	82.488
3	0.442	7.360	89.848
4	0.341	5.688	95.536
5	0.183	3.044	98.580
6	0.085	1.420	100.00

In the analysis we see that under communalities and initial column, communality of each variable, v1 to v6 is 1.0 as unities were inserted in the diagonal of the correlation matrix (table-6). We have determined the appropriate number of factors based on the *Eigenvalues*. Only those factors have been considered whose Eigenvalues are greater than 1.0. Eigenvalue of a factor represents the total variance explained by that factor. In this

research, on the basis of Eigenvalues, we have retained 2 factors. The Eigenvalues of the first two factors are 2.731 and 2.218 respectively (table-7). The remaining factors have Eigenvalues which are less than 1.0, thus those factors have not been retained.

Table -8: Rotated Component Matrix (a)

	Component	
	1	2
v1	.962	-.027
v2	-.057	.848
v3	.934	-.146
v4	-.098	.854
v5	-.933	-.084
v6	.083	.885

Extraction Method: Principal Component Analysis.

Rotation Method: Wimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

In the rotated factor matrix (table-8), factor 1 has high coefficient for variables v1 (High Speed), and v3 (More Value Added Service), and a negative coefficient for v5 (Simple billing System). Factor 2 is highly related with variables v2 (More Coverage), v4, (Low monthly Charge) and v6 (More Promotion). Factor 1 may be leveled as Premium or Gold user and Factor 2 may be leveled as Economy or Silver user (table-9). At last we can easily summarize that consumer always try to get benefit from the WiMAX as low cost and high speed.

Table 9: Factor Label Name

Factors	Co-efficient	Level Name
1	v1, v3, v5	Premium / Gold User
2	v2, v4, v6	Economy / Silver User

5.3 Results of Multidimensional Scaling Analysis:

To get the results of MDS through Spatial Map, I have used metric scale data to compare among nine internet service providers brand of Bangladesh, a popular computer program for analyzing marketing data. From a non-technical point of view, the purpose of multidimensional scaling (MDS) is to provide a visual representation of the pattern of proximities (i.e., similarities or distances) among a set of brands.

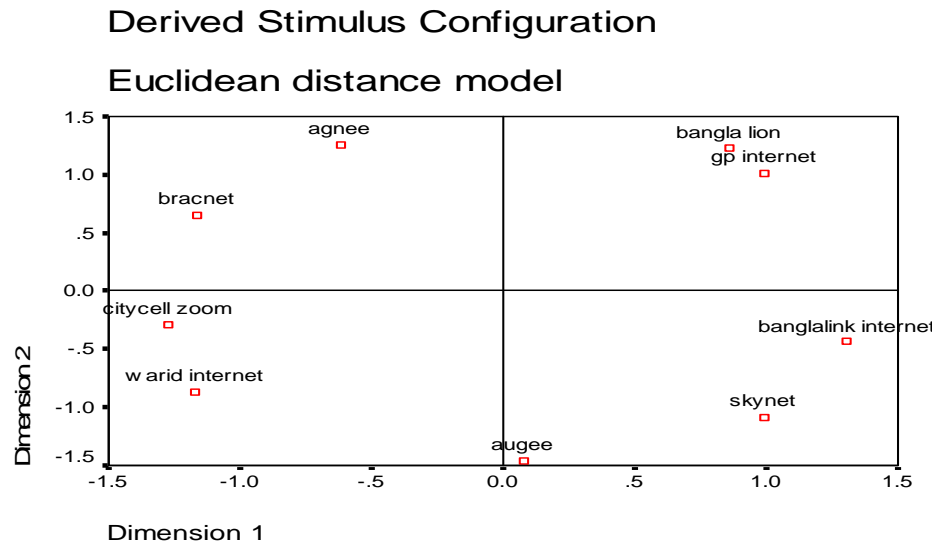


Figure 3: Multi-dimensional Scaling

Relative positions of the competitors could have been shown using Multi Dimensional Scaling (MDS) technique. By transforming certain relevant data, two dimensions can be identified namely: price and speed. Based on these dimensions, a strategic group map is furnished in Figure 3. Brands are denoted Citycell Zoom to GP Internet and are characterized by various attributes. In this survey, the horizontal axis is labeled as more speedy versus less speedy. Brands (internet service providers) with more speedy include Banglalion, GP Internet, Banglalink and Skynet. Brands with less speedy include Augée. The vertical axis is interpreted, as more competitive price versus less competitive price. The service providers with more competitive price are Bracnet and Agnee while Citicell Zoom and Warid Internet are less competitive service providers. Finally, from this figure it appears that Banglalion WiMAX is the market leader (in terms of speed) of all the competitors.

5.4 Results of Conjoint Analysis:

Conjoint analysis is a technique to determine the relative importance that consumers attach to salient attributes. For identifying students' preference for using WiMAX service form Banglalion, We select three attributes- duration of the package, speed and monthly charge. Each attributes has two levels- high level and low level package. We will use full profile approach, also called multiple-factor evaluations, full or complete profiles of brand are constructed for all the attributes. Given three attributes, defined at two levels each, a total of $2 \times 2 \times 2 = 8$ profiles can be constructed. We will collect data by using 9-point scale (1 = extremely disagree and 9 = extremely agree).

Table – 10: Variable Specifications for Conjoint Analysis

Dependent Variable	Students' preference for purchasing WiMAX service.		
Independent Variables	<ol style="list-style-type: none"> 1. Duration of the Package 2. Speed 3. Monthly Charge 		
Data Type			
Dependent Variable	Metric Data		
Independent Variables	Categorical		
Levels of Independent Variables			
	Duration of the Package	Speed	Monthly Charge
High	24 hours	more than 128 kbps	Tk. 600
Low	9 hours	128 kbps	Tk. 300

Table -11: Model Summary for three attributes of a package

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.344(a)	.119	.112	2.208

a Predictors: (Constant), Monthly Charge, Speed, Duration of Package

Table- 12: Coefficients(a) for three attributes of a package

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.480	.587		9.330	.000
	Duration of Package	-1.400	.245	-.290	-5.716	.000
	Speed	.300	.229	.064	1.309	.191
	Monthly Charge	.650	.229	.139	2.837	.005

a Dependent Variable: Preference Rating

Table- 13: Model Summary for high level package

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.352(a)	.124	.118	2.201

a Predictors: (Constant), Tk600, morethan128kbps, 24hour

Table- 14: Coefficients (a) for high level package

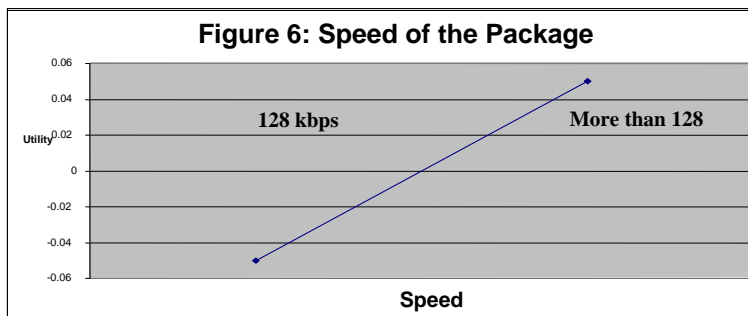
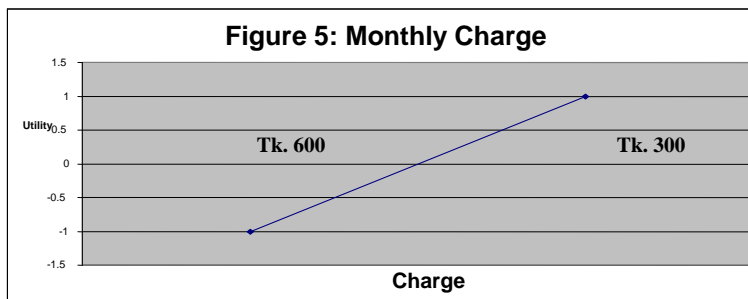
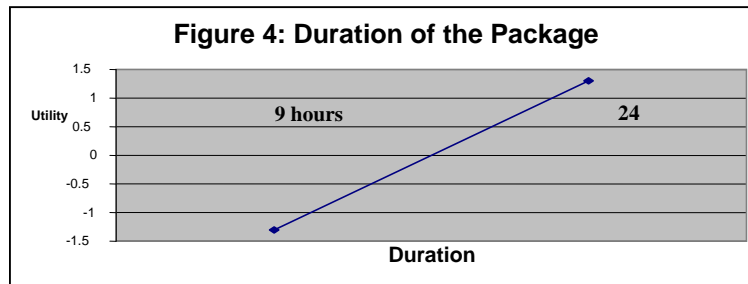
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.800	.220		21.811	.000
	24hour	1.310	.220	.280	5.952	.000
	morethan128kbps	.050	.220	.011	.227	.820
	Tk600	-1.000	.220	-.214	-4.544	.000

a Dependent Variable: Preference Rating

Table- 15: Coefficients (a) for low level package

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.160	.220		23.446	.000
	9hour	-1.310	.220	-.280	-5.952	.000
	128kbps	-.050	.220	-.011	-.227	.820
	Tk300	1.000	.220	.214	4.544	.000

a Dependent Variable: Preference Rating



By interpreting the result, we find that monthly charge is the most important attribute. The second important attribute is speed and the third important attribute is duration of the package (table-12). In case of monthly charge, Tk. 300 per month is the most important, followed by Tk. 600 per month (table-14,15 & figure 5). In case of speed, more than 128 kbps is the most important than 128 kbps (table-14 & 15). In case of duration of the package, 24 hours duration is the most important, followed by 9 hours (table-14, 15 & figure 4). To determine the most important attribute, R^2 of 0.119 is obtained. It indicates a poor fit (table-11). In determining the most important level, R^2 of 0.124 is obtained. It also indicates a poor fit (table-13).

6. RECOMMENDATIONS

WiMAX service providers have to take some immediate actions. These are described below:

- Students have a great interest to use WiMAX service from Banglalion Communication Ltd.
- In explaining preference for using WiMAX Speed is the most significant factor. Besides, the premium user is always conscious about speed, so the company should offer high speed package.
- Company should offer promotional price to attract customer and offer a package for students that has more than 128kbps speed, 24 hours duration and monthly charge Tk.300.
- The company needs to offer trial use to attract new user. The company should expand its network coverage all over the country as early as possible, specially University of Dhaka and BUET.

CONCLUSIONS

The results of this study seem to suggest that speed, monthly charge, duration, promotion, service, initial price, network coverage and billing system have an influence on purchasing decision. Banglalion Communication Ltd. has the distinct position in students' mind from the speed and duration perspective. For attracting preference, initial price of the package is a vital factor. Banglalion Communication Ltd.'s marketing strategy seems to work better and enjoys edge over other company (Qubee) because of its efficient marketing and sales human resources. Banglalion is as one of the WiMAX service providers is now more concerned about the major threats that are authentication, encryption and availability. Moreover, WiMAX is the next-generation of wireless technology designed to enable pervasive, high-speed mobile internet access to the widest array of devices including notebook PCs, handsets, smartphones, and consumer electronics such as gaming devices, cameras, camcorders, music players, and more. For that reason, further studies should find better ways of measuring these factors affecting consumer preference of using WiMAX service in a greater extent and also additional variables may be introduced into these models.

References

- Broadcom Corporation (2003). "IEEE 802.11g: The New Mainstream Wireless Standard," (accessed on December 10, 2009), [available at http://54g.org/pdf/802.11g_WP104-RDS1.pdf].
- Broadband and its Future in Bangladesh, (accessed on December 10, 2009), [available at <http://broadbandinbangladesh.wordpress.com>].
- Cayla, Guy, S., Cohen, and D., Guigon (2005). "WiMAX an Efficient Tool to Bridge the Digital Divide," (accessed December 10, 2009), [available at http://www.wimaxforum.org/news/downloads/WiMAX_to_Bridge_the_Digitaldivide.pdf].
- C., Cicconetti, L., Lenzini, and E., Mingozzi (2006). "Quality of Service Support in IEEE 802.16 Networks," *IEEE Network*, vol. 20, pp. 50–55.
- Zikmund, William G., (2007): *Business Research Method*, Seventh Edition, Thomson South-Western,
- Cross, Thomas B., F., Orthman, and S., Browne (2005). "How and Why to Win With WiMAX," *Telecommunications*, (accessed December 12, 2009), [available at http://telecommagazine.com/Americas/Article.asp?Id=AR_1287].
- (December 7, 2005), "The IEEE Working Group on Broadband Wireless Access Standards," (accessed on December 10, 2009) [available at <http://grouper.ieee.org/groups/802/16/index.html>].
- Ghosh *et al.*, (2005). "Broadband Wireless Access with WiMAX/802.16: Current Performance Benchmarks and Future Potential," *IEEE Commun. Mag.*, vol. 43, pp. 129–36.
- Griffith, Eric (2005). "WiMAX on the Horizon," *Wi-Fi Planet*, (accessed December 12, 2009), [available at <http://www.wifiplanet.com/news/article.php/3563276>].
- Hazen, Mark (2005). "Will WiMAX Replace 3G and Fixed Broadband?" *RF Design (Online Exclusive)*, in *Business Index ASAP*, (accessed on January 5, 2010 [database-online]).
- "Is WiMAX Technology Secure?" WiMAX.com, (accessed on January 5, 2010), [available at <http://www.wimax.com/education/faq/faq27>].
- Jalil, M., A., & Ferdous., R. (1999): "Basic Statistics: methods and applications", Rubi Publication, Dhaka.

- K., R., Santhi, and G., S., Kumaran. (2006). "Migration to 4G: Mobile IP based Solutions," *Proc. Advanced Int'l. Conf. Telecommun. and Int'l. Conf. Internet and Web Apps. and Svcs.*, French Caribbean, pp. 76–81.
- K., Philip (2007): "Marketing Management", Eleventh Edition, Prentice-Hall of India.
- Schiffman, L., G., & Leslie, L., K. (2002): "Consumer Behavior", Eighth Edition Prentice-Hall India.
- Malhotra, N., K., (2006): "Marketing Research: An Applied Orientation", Fifth Edition Prentice-Hall of India.
- Sanders, Tim, (2005). "WiMax/802.16 Revealed," *Wi-Fi Planet*, (accessed on January 5, 2010), [available at <http://www.wi-fiplanet.com/tutorials/article.php/3550476>].
- WiMAX Forum Home, (accessed on January 5, 2010) [available at <http://www.wimaxforum.org/home>].
- WiMAX in Bangladesh : bdnews24.com (posted on October 20, 2008, Retrieved on June 6, 2009)
- WiMAX Tecnology, www.intel.com (Retrieved on June 16, 2009)

APPENDIX**Binary Logistics****Table- 1: Case Processing Summary**

Unweighted Cases (a)		N	Percent
Selected Cases	Included in Analysis	100	100.0
	Missing Cases	0	.0
	Total	100	100.0
Unselected Cases		0	.0
Total		100	100.0

Table- 2: Variables not in the Equation

			Score	Df	Sig.
Step 0	Variables	SPEED	10.271	1	.001
		COVERAGE	.092	1	.761
		BILLING	.908	1	.341
		SIMPLE	.873	1	.350
		PROMOTIO	1.130	1	.288
		VAS	1.521	1	.217
Overall Statistics			17.166	6	.009

Factor Analysis

Table- 3: Correlation Matrix

		v1	v2	v3	v4	v5	v6
Correlation	v1	1.000	-.053	.873	-.086	-.858	.004
	v2	-.053	1.000	-.155	.572	.020	.640
	v3	.873	-.155	1.000	-.248	-.778	-.018
	v4	-.086	.572	-.248	1.000	-.007	.640
	v5	-.858	.020	-.778	-.007	1.000	-.136
	v6	.004	.640	-.018	.640	-.136	1.000

Table- 4: Reproduced Correlations

		v ₁	v ₂	v ₃	v ₄	v ₅	v ₆
Reproduced Correlation	v ₁	.926(b)	-.078	.902	-.117	-.895	.057
	v ₂	-.078	.723(b)	-.177	.730	-.018	.746
	v ₃	.902	-.177	.894(b)	-.217	-.859	-.051
	v ₄	-.117	.730	-.217	.739(b)	.020	.748
	v ₅	-.895	-.018	-.859	.020	.878(b)	-.152
	v ₆	.057	.746	-.051	.748	-.152	.790(b)
Residual (a)	v ₁		.024	-.029	.031	.038	-.052
	v ₂	.024		.022	-.158	.038	-.105
	v ₃	-.029	.022		-.031	.081	.033
	v ₄	.031	-.158	-.031		-.027	-.107
	v ₅	.038	.038	.081	-.027		.016
	v ₆	-.052	-.105	.033	-.107	.016	

Extraction Method: Principal Component Analysis.

a Residuals are computed between observed and reproduced correlations. There are 5 (33.0%) no redundant residuals with absolute values greater than 0.05. b Reproduced communalities

Conjoint Analysis

Table- 5: Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	Monthly Charge, Speed, Duration of Package(a)	.	Enter

a All requested variables entered.

b Dependent Variable: Preference Rating

Table- 6: ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	259.500	3	86.500	17.745	.000(a)
	Residual	1930.340	396	4.875		
	Total	2189.840	399			

a Predictors: (Constant), Monthly Charge, Speed, Duration of Package

b Dependent Variable: Preference Rating

Table- 7: Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	Tk 600, morethan128kbps, 24hour (a)	.	Enter

a All requested variables entered.

b Dependent Variable: Preference Rating

Table- 8: ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	271.860	3	90.620	18.710	.000(a)
	Residual	1917.980	396	4.843		
	Total	2189.840	399			

a Predictors: (Constant), Tk600, morethan128kbps, 24hour

b Dependent Variable: Preference Rating

Table- 9: Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	Tk300, 128kbps, 9hour (a)	.	Enter

a All requested variables entered.

b Dependent Variable: Preference Rating

Table- 10: ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	271.860	3	90.620	18.710	.000(a)
	Residual	1917.980	396	4.843		
	Total	2189.840	399			

a Predictors: (Constant), Tk 300, 128 kbps, 9 hour

b Dependent Variable: Preference Rating