Perceptual Mapping of Mobile Services Operators: An Empirical Investigation among Management Students in Iran

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Abstract: A comparison of consumer's perception regarding mobile operators was done on three operators. The study focuses on how students select brands of mobile services operators. Discriminant analysis is used to map selected mobile operators along with their attributes. The paper investigates how consumers associate the attributes in different dimensions with reference to leading service providers. Operators do not differ significantly with regard to attributes. However, they vary in their promotional campaigning and years of existence in the market.

1. Introduction

With liberalization and Internationalization in telecommunication, service quality has become an important means of differentiation of the brand to achieve business success. In last decade the Iranian mobile services are experiencing highest growth in terms of subscribers and revenue. Despite this, most of the mobile services providers in Iran are primarily focusing on expanding their customer base tends to overlook on brand building. There is proven relationship between service quality and customer satisfaction (Danher and Mattssor, 1994). This sector is crucial in spurring the growth especially industrial and service sector of any economy. Historically, telecommunication has been a state controlled sector but opening of the Iranian economy resulted in to privatization and intensification of competition among operators in a particular circle.

Customer's value hierarchy for competing brands in mobile services space suggests that desired value is composed of a preference for specific and measurable attribute performances and consequently linked to goals for user requirements. Present scenario does not allow consolidation but with expansion of customer data base would promote scaling of there operations. Call charges in telecommunication have seen the downward trend in the last decade because of advances in technology and increased data base of mobile service users. The launch of per second billing has further intensified the competition in the market. The customer relationship is the key in today's competitive environment (lovelock, 2001). The dynamic change in the business environment of mobile operators compelling them to improve services along with decreasing price of call rates and compelling the companies to shift their revenue models and business processes to cop up with the changing need and expectations of the customers. Customers do not want congestion in the network and want to access internet on there mobile handset in minimum possible time (Danhand Mattssor, 1994). Another complex dimension to the competitive trend in the Iranian telecommunication industry is the ease of imitation of products and services in the industry. This trend fosters a scenario of continuous fight for customers share (Mendzela, 1999). A number of objectives are set by customers in selecting different operators' plans on the basis of their past experiences with respect to making an evaluation in the desired value (Spreng et al., 1996). (Siles et al., 1994) argued that though customers have always been reluctant to switch service providers, but impersonal and unfriendly service will still drive them away good relationship with customers. Generally, employees and customers often work together in the creation of many services. These factors would become more relevant in Indian scenario when the government will allow portability of numbers from one network operator to another by end of December 2010.

Perceptual mapping is a tool that enables market researchers visually represent customers' perceptions of products, attributes, brands, promotions or services creating ability would push mobile operators to react to changing conditions. This will help operators to understand declining profitability with increase in competition, realigning operational plans to line up with the business processes. Perceptual mapping is the graphical technique used to display the perceptions of potential customers. This will enable a company to

understand and gain a sustainable edge over the competitors. It is an analytical tool to understand customers. Perceptual mapping enables firms to preserve there existing customers and their loyalty, which is taken as an incentive by the management of any operators to measure customer awareness for marketing stimuli. According to (Anderson and Srinivasan, 2003) without customer loyalty, even the best-designed business model will soon fall apart. In their quest to develop a loyal customer base, most companies are trying their best to satisfy their customers and in process of developing long run relationship with them.

2. Conceptual background

Perceptual mapping offers a unique ability to understand market structure, analyzing the complex relationships among marketplace competitors and the criteria used by buyers in making purchase decisions and recommendations. Its powerful graphic simplicity appeals to senior management and can stimulate discussion and strategic thinking at all levels of all types of organizations. Perceptual mapping is a tool that helps market researchers visually represents customers' perceptions of products, attributes, brands, promotions or services (Jawarharlal and Kumar, 2004). Perceptual mapping is used to satisfy marketing and advertising information needs related to product positioning (DeSarbo and Rao, 1984; Wind, 1982), competitive market structure (Srivastava *et al*., 1984) There are two approaches to perceptual mapping: attribute based and non-attribute based. Attribute based approach is applied in the present study. The respondents evaluate brands on the basis of attributes perceived by them in making purchase decision.Analysis of the brand association represents the basis of the brand equity measurement, as models of brand equity usually give emphasis to brand knowledge and brand associations (Aaker, 1991; Green et.al, 1988; Sharma & Ojha, 2004). (Lonergan, 1999) stated that customer churn remains a major challenge for cellular operators. Most common cause of churn among mobile customers is switching to another service/tariff plan offered by different operators. Chadha and Kapoor (2008) has conducted perceptual mapping of selected insurance companies in the Insurance and justified the importance of perceptual tools importance for the marketers.

3. Methodology

A study was conducted to understand that which mobile service operators are perceived to have an edge in terms of convenience, perceived network quality problematic measures in the network like congestion, call drops, and network quality. Effort had been made to study management student's perceptions and expectations regarding different mobile operators operating in the same circle. A questionnaire was study the responses of management graduates using leading three operator services were selected in Tehran. The survives operators considered are namely: Hamrah aval, Irancell and Talya. Total 140 management students using prepaid services of cellular operators from different management institutions running full time two year MBA course under the university system were considered. A convenient sampling method was followed for the study. This segment of students is important as they are aware about the latest plans offered by different mobile cellular companies in the market and are very price conscious segment . Perception of only those students was considered who were having there own personal prepaid mobile connection. The data was collected through trained investigators who are IJCEM International Journal of Computational Engineering & Management, Vol. 11, January 2011 73 mapping regarding mobile operators companies well versed about the objectives of the study. The respondents were asked to evaluate the quality of the service provided by their mobile operators. Perceived service quality of each variable was measured through questions designed on a 5 point Likert-type scale ranging from Strongly Agree to Strongly Disagree.

4. Statistical Technique Used

In order to achieve the objective discriminant analysis had been used to identify the attributes that were best associated with the mobile service providers. Number of groups that are generated is three. The discriminant analysis output will give Eigen values of each function and amount of variance would explain from the original data. The discriminate function represents the axes on which the brands are first located and then attributes are located.

5. Results

Data collected was analyzed through series of validated tools and procedures. The critical step involved in the development of a measurement scale is assessment of reliability constructs. The sample respondents were in the age group of 18 to24. It was found students use mobile services to keep in touch with friends (%54), family (%20), boyfriends (%21) and girlfriends (%8.5). However, some student uses mobile cellular services to move out from loneliness, depression, anxiety. Total of %56,8 of students were addicted using cellular services and spent average 29 minutes daily on usage of mobile phone calls. The mobile phone usage pattern of working students varies from non working students.

Table 3 shows factors influencing the customers while purchasing the mobile phone connection. The

result shows that price, quality of service and degree of customization of plan are important criterion for selecting the product. The mobile service recharge coupons are generally sold through intermediaries and plays critical role in influencing purchase behavior of the customers. To draw perceptual map, students were asked to rate selected mobile operators on six attributes namely: availability of the recharge coupons and operator services, cost, plan customization, promptness of customer services, fidelity and reliability of network table 5. All attributes were measured using five point rating scale (1-Strongly Agree to 5-Strongly Disagree). Discriminant analysis was used with the help of SPSS software and results have been tabulated from to table 10. Pooled with the group statistics in table 6 indicates high variation in the standard deviation implies the attributes chosen for analyzing different cellular operators are distinct. The Eigen values in table 7 shows that first two functions represent ٪٨٧ of the cumulative variance. Hence these two functions have been used for further interpretation. First four canonical discriminates were used in the analysis. Perceptual map was drawn using SPSS output of the discriminant analysis and excel work sheet. All three mobile service brands have their unique position on the map. Using the standardized coefficients of attributes on function 1 and 2 are incorporated in table 8. Unstandardized canonical discriminant functions are evaluated by group means. Based on the attribute vectors from the axis, it can be concluded that availability of the recharge coupons

and services, cost, plan customization, promptness of customer services, fidelity and reliability of network heavily dependent on dimension 1. Longer arrows pointing closely than the given group centroids.

Table 1. Mobile Services Used by the Sample Respondents

Mobile operator	Percent
Hamrah aval	45
Irancell	35
Talya	20

Table 2. Demographic Characteristics of Respondents

Family Income	Percent
Less than 1000000 Rials	5.12
Between 1000000-3000000 Rials	5.42
Between 3000000-5000000 Rials	30
More than 5000000 Rials	15
Occupation	
Students Dependent on Guardian	55
Part time Employed Students	30
Self-employed Students	15
Monthly Expense on Mobile Phone Services	
Monthly expense Less than 200	5.17
Rs 200-500	5.27
Rs 500-700	30
Rs 700 and Above	25

Table 3. Factors Considered by Mobile Service Consumers for Selecting Mobile operator

Factors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Price	-	-	5.7	35	5.57
Quality of Service	-	-	5.17	5.32	50
Degree of customization Product	-	-	5.12	30	5.57
Availabilty	-	5	5.7	40	5.47
Network (call Barring, coverage, Call Drop)	-	-	-	20	80

Table 4. Group Statistics

Brand	Mean	Std. Deviation	Valid N (listwise)	Unweighted	Weighted
1.0	Availability	3.000	2.828	2	2.000
	Cost	500.116	335.23	2	2.000
	Plan Customization	2.000	.000	2	2.000
	Customer Service	4.500	.707	2	2.000
	Fidelity	3.500	.707	2	2.000
	Reliability	3.000	.000	2	2.000
2.0	Availability	3.000	1.000	3	3.000
	Cost	333.181	437.70	3	3.000
	Plan Customization	3.333	1.528	3	3.000
	Customer Service	4.000	1.000	3	3.000
	Fidelity	3.667	.577	3	3.000
	Reliability	4.000	1.000	3	3.000

3.0	Availability	3.857	.900	7	7.000
	Cost	429.272	.19.186	7	7.000
	Plan Customization	2.714	.756	7	7.000
	Customer Service	3.714	.756	7	7.000
	Fidelity	3.571	1.134	7	7.000
	Reliability	3.143	.690	7	7.000
Total	Availability	3.500	1.100	20	000.20
	Cost	500.227	011.162	20	000.20
	Plan Customization	2.950	.999	20	000.20
	Customer Service	3.950	.759	20	000.20
	Fidelity	3.400	.940	20	000.20
	Reliability	3.500	.889	20	000.20

Table 5. Pooled Within-Groups Matrices

		Availability	Cost	Plan Customization	Customer Service	Fidelity	Reliability
Correlation	Availability	1.000	-.286	-.072	.336	.170	-.118
	Cost	-.286	1.000	-.193	-.008	.163	.155
	Plan Customization	-.072	-.193	1.000	.078	.096	.246
	Customer Service	.336	-.008	.078	1.000	.032	-.209
	Fidelity	.170	.163	.096	.032	1.000	-.226
	Reliability	-.118	.155	.246	-.209	-.226	1.000

Table 6. Eigen values

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.850	58,6	58,6	.678
2	.420	28,9	87,5	.544
3	.122	8,4	95,9	.329

Table 7. Standardized Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Availability	.901	.010	-.091
Cost	.893	-.134	.626
Plan Customization	.589	.608	.204
Customer Service	-.756	-.113	.740
Fidelity	-.489	-.127	-.395
Reliability	-.550	.599	-.001

Table 8. Structure matrix

	Function		
	1	2	3
Availability	.330	-.126	-.103
Cost	-.104	.778	.091
Plan Customization	.111	.759	.109
Customer Service	-.316	-.191	.708
Fidelity	-.034	-.227	-.265
Reliability	.363	-.181	.543

5. Conclusion

One thing that clearly came out in the study was that the difference in the perception of customers among the different mobile operators running in the circle. Convenience and customer perceived network quality emerging as important factors in building

positive perception among the customers. Differentiation for different brands can occur only by adding new service elements along with providing better quality in delivering the current service and inducing information about the services and new plans. Telecommunication industry is not well diversified so retaining customer is one important strategy available to telecom companies in order to remain competitive. Though the industry is currently growing in terms of coverage and customer base, retaining customer should be an attractive option than attracting new customers since it is less expensive. The reliability of the network play an important role in influencing overall service quality as perceived by the customers. The operators in the circle have to respond to the competitive tariff plan. The plans presently existing in the market are not suited to youth that makes longer distance call. The operators running their operation in the circle still has to look for customization for more penetration in the prepaid segment especially when portability of numbers would be allowed in future. The operators should focus on availability, reliability, customer service, plan customization and fidelity when selecting operators.

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