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## AN EMPIRICAL STUDY ON FACTORS INFLUENCING THE SELECTION OF VAS (VALUE ADDED SERVICES) IN MOBILE TELECOM INDUSTRY

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### ABSTRACT

*The revolution in telecom industry has taken the world by storm. Mobile technologies have gained immense popularity and diffused widely in human lives during last decade. The Value added services (VAS) refer to an addition of some value on a basic service offered to the end- consumers by service provider or an intermediary for consumption. Value added services (VAS) viz. SMS (Short Message Service), USSD (Unstructured Supplementary Service Data) and DATA based services have a huge impact on consumer's usage patterns and become a significant differentiators across the operators leading to new opportunities in the innovation of differentiating useful services. Since VAS is considered to be a key growth driver for revenues in mobile telecom industry, it is of vital importance for operators to analyze customer's preferences and satisfaction towards MVAS. Hence, the present study aims to analyze factors/attributes, which play an influential role in selection of Value Added Services employing Regression and Factor analysis. The study reveals that the order of influencing attributes for satisfaction level based on significant p-values has been found to be Content Type > Value for Money > Product Knowledge > Promotional Offers > Utility of the Service. Of the total fifteen variables influencing the selection of VAS determined by factor analysis, the prominent factors include Mobile Advertisement, Utility of the Service, Discounts and Availability on different modes.*

### KEYWORDS

factor analysis, regression analysis, satisfaction level, selection of MVAS.

### INTRODUCTION

India's telecom network considered as one of the primary sector to connect the world for the socio-cultural, commercial and economic progress of the country is the second largest in the world after China in terms of the number of telephone connections. The 2016-17 annual report of the department of telecommunications (DoT) reveals that the country has 1,124.4 million telephone connections including 1099.9 million wireless telephone connections with an overall teledensity of 87.9%. The mobile industry in India contributes 6.5% (\$140 billion) to the country's GDP and employs direct/indirect over four million people. The mobile communication sector has undergone tremendous transformation and phenomenal change and may get the priority sector lending status (PSL) by which borrowing, overall cash flow and debt management will become easier for all telecom service providers (TSPs). There is hypercompetitive situation in the sector due to customer interest in the medium to long term, which may be best served in a market of this size with at least three to four operating telecommunication companies actively competing on factors such as price, quality, innovation etc. The pricing disruption over 15% year on year in the Indian telecom market due to the entry of new operators has resulted in creating further stress on sector profitability, cash flows and leverage. The industry dynamics seem to have drastically been altered by the recent market developments resulting in the sector passing through a phase of severe financial and mental stress. The reduction in call connect rates/ interconnection usage charges, firm spectrum prices and high levies like license fee and GST are considered to be big constraints faced by the sector. The telecom sector has also been under severe financial strain with a debt load to 4.6 lakh crore. The inter-ministerial group (IMG) constituted to mitigate the financial woes in its recommendation to telecom commission – the apex decision making body at the telecom department has extended the time period for payment of spectrum bought in auctions by telecommunication companies to sixteen years from the existing ten years. The interest rate charged over penalties imposed on service providers has also been lowered down.

The telecom operators in order to protect their turf offer Value Added Services, which provide some additional benefit to customers compared to the basic service. The initial potential applications that drove the Mobile VAS industry were entertainment-based (ringtone, game, music downloads etc.) and information-based (news alerts, stock quotes, weather reports, bank balance queries etc.) services. Subsequently, messaging-based services (such as push email) took the industry to a new height. The next wave of growth for the Mobile VAS industry is expected from location based services and m-Commerce offering benefits such as personalization, convenience, security, high-class entertainment etc. to the end customers. The mobile value added services classified as Voice, SMS, USSD and DATA based services stand alone in terms of revenue potential for the service provider, being different in form compared to the basic service and typically, do not cannibalize the basic service revenues. There are a large number of factors/attributes which may influence the selection of Value Added services comprising of satisfaction level, range of products, utility of the service, reasonable price, discounts, value for money, customer service, availability on different modes, promotional offers, product knowledge, balance deduction with notification, mobile advertisement, content type, content localization, technology -2G/3G/4G and basic services like network quality. It is therefore imperative for marketers to analyze customer's preferences of MVAS to come up to the expectations, satisfaction and retention of customers.

### REVIEW OF LITERATURE

A study by **Kim, et al. (2004)** for a Korean mobile communication services revealed that the customer satisfaction towards mobile service provider is strongly affected by call quality, value-added services and service provider's support. **Benni, Hjartar and Laartz (2003)** observed that mobile telecom companies can build within the mobile-services domain services addressing a variety of mobile devices viz, charge customers for on-line games (a reusable service, since it wouldn't have to be created anew for each game launched), send out big volumes of automated text messages and reformat video streams or music. **Homner and Krause (2004)** have described that mobile-telephone companies tend to consider prepaid service a poor cousin of monthly bill subscriptions as on an average these generate only 35 percent revenue. Nevertheless, prepaid customers if managed properly can offer a healthy revenue stream whether or not they eventually become monthly subscribers. The implementation of effective acquisition program can increase the profitability of prepaid customers by 40 to 80 percent if companies choose their customers more carefully. **Harvinder Singh (2005)** found that mobile telephony in India has seen tremendous growth regarding subscriber base, teledensity and usage, over the years but not been translated into a high Average Revenue per User (ARPU). Furthermore, a gradual but steady shift of mobile service providers towards value-added services may help in achieving a high level of differentiation among service providers. **Sandhir (2004)** in his work in

Ludhiana found that customers make their choice of a mobile service provider by considering five factors: Connectivity, Coverage, Tariff, VAS and Customer Care. **Jessy John (2011)** in his study has investigated the factors influencing loyalty of BSNL customers. Despite the fact that the BSNL services are cost effective the quality of customer services need to be improved as per their expectations. **Smruti Bulsari (2007)** in his study on national telecom policy 1994 and structural change in telecommunication sector of Gujarat has found a significant impact of development in telecommunication sector by providing advanced technology and Value Added Services. **Sivarthina and Aranganathan (2011)** in their study have reported that due to competitive scenario the mobile service providers for brands marketing need to promote strategies. The mobile internet has gained popularities among youth and business class. The mobile advertising plays a significant role in market penetration and mobile internet users. **Millikarjune, Krishna and Pradeep (2013)** have described that switching is more in prepaid customers due to low switching costs and competitive tariff plans and ease of mobile number portability. As the information for tariff plans and Value Added Services help to maintain customer friendly environment hence network quality and new technologies be offered to customers to enhance the customer loyalty. **Huiying, Ge Zhu, Tingjie and Xuan (2012)** have found that security and social influence are two of the most important factors in 3G market and 3G-VAS must be enjoyable and useful. **Rajwanshi (2014)** has reported the influence of two factors namely switching cost and product/services complexity in adoption of NGTS (Next Generation Telecom Services). **Petzner and Meyer, (2011)** have provided insights in to the views of various generations on their perceptions of the service quality provided by their cellphone network service provider. **Wang (2012)** investigated the influences of perceived playfulness and information systems quality on mobile phone subscribers' intentions to use MVASs. It was found that information, system, and service qualities act as important factors of perceived ease of use and usefulness. **Thakur, Kaur and Sharma (2015)** in their empirical research found that attributes like the quality of service, the price charged, promotional offers, relative advantage, ease of use, social influence and user experience are found to be most noteworthy while selecting M-VAS. **Islam (2015)** in an empirical research conducted in Bangladesh to identify the determinants that affect intention of user towards mobile value added services found that usefulness, perceived ease of use, social influence, risk and enjoyment were the major factors out of which use intentions scored highest and speed of use scored the least. **Rengarajan and Kavipriya (2012)** stated that the majority of people in Tripur are using value-added services viz. SMS, Ringtones and Pictures download, video clips, information services, Internet/GPRS (General Packet Radio Service) and third party conference. Consumers were satisfied with the price charged for the value added services.

### NEED/IMPORTANCE OF THE STUDY

The rapid growth of VAS segment has been one of the instrumental factors contributing substantially towards India's success in mobile telecom industry viz. 10-14% of the total revenue of mobile telecom service is generated through VAS. The consumer and enterprise VAS market is expected to grow at a CAGR of 9.7% and 19.3% respectively during 2015-2020. Given the rapidly increasing competition for customer retention and service differentiation by the telecom operators, the demand for VAS is high among 'GenY' who are inclined to use smart phones and adopt VAS for faster internet speeds in the wake of gradual transformation of country into a digital economy (the govt has kick-started the process of giving a boost to the minimum mandated internet speed from existing 512kbps to at-least 2mbps and more), better access of data services as well as a host of other applications. Despite the realization about the rich environment of VAS a deep knowledge of the factors influencing consumers satisfaction and potential of this medium in view of new technologies 3G, 4G, 5G etc. constitutes the need of study.

### STATEMENT OF THE PROBLEM

Mobile market continues to experience value erosion and financial stress led by competitive pressures. The decline in industry revenues and stress on sector profitability, cash flows and leverage has resulted from pricing disruption in Indian telecom sector. Telecom sector is committed to its goal of increasing revenue market share in this competitive environment of a good number of telecom operators by providing superior customer experience and strategically investing behind building more data capacities. In view of visibility of future profits a deeper knowledge of the elements influencing Consumers use of this medium and of how its use can bring consequential changes in their lives is of utmost importance. Understanding customer's expectations and why are they attracted to the VAS will help advance research in areas ranging from mobile advertising to education through revenue generation. This study attempts to understand VAS usage patterns and motives of urban mobile users in Shimla, which can help to identify crucial points where intervention may be necessary in order to realize the full potential of VAS into which it can expand and design incentives. Literature reveals that although a few scattered studies have been carried out on the usage patterns of VAS, yet in the perspective of Himachal state it is an important initiative in the quest to access the factors influencing the selection of VAS in mobile telecom industry- fast mode of communication bringing about rapid changes in human lives and business scenario.

### OBJECTIVES

The present work has been undertaken with an objective to study the relationship between Consumers satisfaction level and fifteen variables influencing the selection of Value Added Services in mobile telecom industry and to analyze these by reducing the large number of overlapping variables to smaller set of factors.

### HYPOTHESIS

To make suggestions for accelerating VAS in telecom mobile industry as customer's behaviour towards value added services has not been found to be influenced by advertisements and promotional offers of telecommunication companies.

### RESEARCH METHODOLOGY

A questionnaire was formed keeping in mind the objectives of the study. The opinions of 300 respondents of Urban Shimla (Himachal Pradesh) in the form of students, working professionals, housewives etc. were collected. The male and female constituted (42.7%) and (57.3%) respectively. The percentage of the respondents constituting different age groups were 1% with less than 18 years of age, 64.7% of 18-24 years, 14.3% of 25-34 years, 11.7% of 35-44, 5.3% of 45-59 years and 3% group of over 59 years. The Occupation status of population in the study captured 10.3% as government staff, 11% employed in private company, 1.7% housewives, 2.0% self-employed, 69% students and 6% falling in other category. Regression analysis has been employed to determine the relationship between two or more variables.

#### Regression Analysis: The Regression equation is

$$Y_1 = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5) + \beta_6(X_6) + \beta_7(X_7) + \beta_8(X_8) + \beta_9(X_9) + \beta_{10}(X_{10}) + \beta_{11}(X_{11}) + \beta_{12}(X_{12}) + \beta_{13}(X_{13}) + \beta_{14}(X_{14}) + \beta_{15}(X_{15})$$

$$SL = \alpha + \beta_1(ROP) + \beta_2(US) + \beta_3(RP) + \beta_4(D) + \beta_5(VM) + \beta_6(CS) + \beta_7(AM) + \beta_8(PO) + \beta_9(PK) + \beta_{10}(BD) + \beta_{11}(MA) + \beta_{12}(CT) + \beta_{13}(CL) + \beta_{14}(T) + \beta_{15}(BS)$$

where 1.  $X_1$  = ROP = Range of products; 2.  $X_2$  = US = Utility of the Service; 3.  $X_3$  = RP = Reasonable Price; 4.  $X_4$  = D = Discounts; 5.  $X_5$  = VM = Value for Money; 6.  $X_6$  = CS = Customer service; 7.  $X_7$  = AM = Availability on different modes; 8.  $X_8$  = PO = Promotional offers; 9.  $X_9$  = PK = Product knowledge; 10.  $X_{10}$  = BD = Balance deduction with notification; 11.  $X_{11}$  = MA = Mobile Advertisement; 12.  $X_{12}$  = CT = Content Type; 13.  $X_{13}$  = CL = Content Localization; 14.  $X_{14}$  = T = Technology; 15.  $X_{15}$  = BS = Basic Services; 16.  $Y_1$  = SL = Satisfaction Level

### FACTOR ANALYSIS

Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. For example, it is possible that variations in six observed variables mainly reflect the variations in two unobserved (underlying) variables. Factor analysis searches for such joint variations in response to unobserved latent variables. The observed variables are modeled as linear combinations of the potential factors, plus "error" terms. Factor analysis aims to find independent latent variables.

### RESULTS AND DISCUSSION

From the data collected two main aspects viz. firstly determining the relationship between two or more variables influencing selection of value added services in mobile telecom industry and secondly analyzing, the factors by reducing the large number of overlapping variables to smaller set of factors have been studied.

Regression analysis has been used to determine the relationship between two or more variables as it enables to deduce **significant relationship** between dependent variable (satisfaction) and independent variables attributes for selection of Value Added services as well as the **impact** of multiple independent variables (attributes for selection of Value Added Services) on a dependent variable (Satisfaction). The descriptive statistics of variables studied by regression analysis (Table 1) having mean value of 4.0 or more out of 1 – 5 range are suggestive of the importance given by respondents to the highlighted attributes for the selection of VAS. The variation has been observed in the magnitude of standard deviation.

TABLE 1: DESCRIPTIVE STATISTICS OF VARIABLES BY REGRESSION ANALYSIS

Variable	Mean	Std. Deviation	N
Satisfaction Level	3.47	0.54	300
Range of products(Assortment)	3.85	0.95	300
Utility of the Service	4.18	0.86	300
Reasonable price	4.32	0.87	300
Discounts	4.04	0.91	300
Value for money	4.49	0.69	300
Customer service	4.48	0.77	300
Availability on different modes	3.9	0.96	300
Promotional offers	3.4	1.15	300
Product knowledge	4.24	0.87	300
Balance deduction with notification	4.16	1.06	300
Mobile advertisement	3.05	1.25	300
Content type	3.62	0.97	300
Content localization	3.59	0.88	300
Technology-2G/3G/4G	4.62	0.66	300
Basic services like network quality	4.53	0.80	300

RELATIONSHIP BETWEEN SATISFACTION SCORE AND VARIOUS ATTRIBUTES FOR SELECTION OF VAS BY CORRELATION METHOD

Five classical rules have been employed to interpret correlation coefficient amongst different variables. i) (r = 0 to 0.20) negligible or no correlation, ii) (r = 0.20 to 0.40) positive but low degree of correlation, iii) (r = 0.40 to 0.60) positive and moderate degree of correlation iv) (r = 0.60 to 0.80) positive and marked degree of correlation v) (r = 0.80 to 1.00) positive and high degree of correlation. The r-value indicates the relationship of satisfaction with various attributes contributing for selection of VAS applications. The correlation matrix with two diagonals (Table 2) upper diagonal depicts the correlation value (r-value) and the significant or p-value. (<0.05 highlighted) in lower diagonal.

TABLE 2: CORRELATION MATRIX OF SATISFACTION AND ATTRIBUTES FOR SELECTION OF VAS

	Satisfaction	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15
Satisfaction	-	0.055	0.183	0.094	0.119	-0.006	0.23	0.247	0.38	0.338	0.273	0.311	0.399	0.302	0.038	0.071
A1	0.171	-	0.502	0.323	0.134	0.208	0.106	0.085	0.095	0.107	0.09	0.059	0.235	0.335	0.059	0.367
A2	<b>0.001</b>	<b>0.000</b>	-	0.321	0.062	0.284	0.218	0.187	0.023	0.051	0.239	-0.072	0.4	0.324	0.17	0.484
A3	0.052	<b>0.000</b>	<b>0.000</b>	-	0.421	0.445	0.166	0.13	0.073	0.024	0.257	0.011	0.142	0.139	0.086	0.271
A4	0.019	<b>0.01</b>	0.141	<b>0.000</b>	-	0.344	0.098	0.089	0.155	0.062	0.168	0.114	0.011	0.138	0.066	0.055
A5	0.457	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	-	0.275	0.046	0.057	0.154	0.281	0.004	0.085	0.207	0.165	0.305
A6	<b>0.000</b>	<b>0.033</b>	<b>0.000</b>	<b>0.002</b>	<b>0.045</b>	<b>0.000</b>	-	0.356	0.271	0.222	0.258	0.155	0.302	0.2	0.194	0.266
A7	<b>0.000</b>	0.07	<b>0.001</b>	<b>0.012</b>	0.063	0.212	<b>0.000</b>	-	0.338	0.271	0.215	-0.01	0.14	0.095	0.217	0.23
A8	<b>0.000</b>	0.051	0.346	0.104	<b>0.004</b>	0.161	<b>0.000</b>	<b>0.000</b>	-	0.476	0.225	0.469	0.264	0.257	0.062	-0.008
A9	<b>0.000</b>	<b>0.032</b>	0.19	0.339	0.141	<b>0.004</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	-	0.239	0.379	0.256	0.377	0.08	0.146
A10	<b>0.000</b>	0.061	<b>0.000</b>	<b>0.000</b>	<b>0.002</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	-	0.151	0.314	0.201	0.152	0.276
A11	<b>0.000</b>	0.154	0.105	0.426	<b>0.024</b>	0.471	<b>0.004</b>	0.433	<b>0.000</b>	<b>0.000</b>	<b>0.004</b>	-	0.334	0.377	-0.108	-0.094
A12	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.007</b>	0.424	0.071	<b>0.000</b>	<b>0.008</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	-	0.652	0.058	0.223
A13	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.008</b>	<b>0.009</b>	<b>0.000</b>	<b>0.000</b>	0.051	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	-	0.002	0.293
A14	0.256	0.155	<b>0.002</b>	0.07	0.128	<b>0.002</b>	<b>0.000</b>	<b>0.000</b>	0.141	0.084	<b>0.004</b>	<b>0.031</b>	0.16	0.488	-	0.161
A15	0.111	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	0.17	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	0.446	<b>0.006</b>	<b>0.000</b>	0.052	<b>0.000</b>	<b>0.000</b>	<b>0.003</b>	-

The regression analysis of satisfaction level related to attributes influencing selection of VAS applications is given in (Table 3). The significant p-value of attributes like Utility of the service (0.034), Value for money (0.015), Promotional offers (0.026), Product knowledge (0.018) and Content type (0.005) have revealed that these are the influencing attributes for satisfaction level.

TABLE 3: REGRESSION ANALYSIS OF SATISFACTION LEVEL WITH VARIOUS ATTRIBUTES

R	0.558 <sup>2</sup>			
R-Square	0.312			
Adjusted R-Square	0.275			
Standard error of estimate	0.461			
F	8.571			
Sig.	0.000*			
	Unstandardized Coefficients	$\beta$	t-value	p-value
(Constant)	2.032			
Range of products(Assortment)	-0.057	-0.1	-1.64	0.102 <sup>NS</sup>
Utility of the Service	0.091	0.144	2.133	0.034*
Reasonable price	0.02	0.032	0.522	0.602 <sup>NS</sup>
Discounts	0.054	0.091	1.588	0.113 <sup>NS</sup>
Value for money	-0.118	-0.151	-2.454	0.015*
Customer service	0.032	0.046	0.781	0.435 <sup>NS</sup>
Availability on different modes	0.046	0.082	1.394	0.164 <sup>NS</sup>
Promotional Offers	0.068	0.145	2.242	0.026*
Product knowledge	0.092	0.147	2.388	0.018*
Balance deduction with notification	0.053	0.105	1.834	0.068 <sup>NS</sup>
Mobile advertisement	0.038	0.088	1.388	0.166 <sup>NS</sup>
Content type	0.117	0.209	2.841	0.005*
Content Localization	0.01	0.017	0.231	0.817 <sup>NS</sup>
Technology-2G/3G/4G	-0.018	-0.022	-0.427	0.670 <sup>NS</sup>
Basic services like Network quality	-0.034	-0.05	-0.807	0.420 <sup>NS</sup>

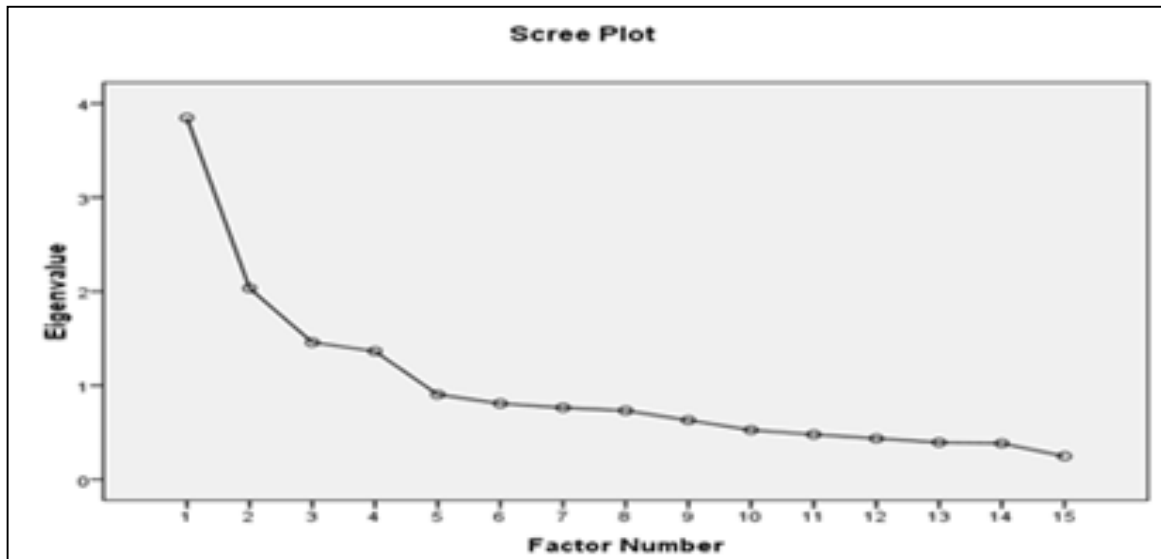
**SATISFACTION LEVEL**

= 2.032 + (-0.057)(ROP) + (0.091)(US) + (0.020)(RP) + (0.054)(D) + (-0.118)(VM) + (0.032)(CS) + (0.046)(AM) + (0.068)(PO) + (0.092)(PK) + (0.053)(BD) + (0.038)(MA) + (0.117)(CT) + (0.010)(CL) + (-0.018)(T) + (-0.034)(BS)

**ANALYSIS OF FACTORS BY REDUCING THE LARGE NUMBER OF OVERLAPPING VARIABLES TO SMALLER SET OF FACTORS BY FACTOR ANALYSIS**

Factor analysis is considered as a data-reduction technique as it reduces a large number of overlapping variables to a smaller set of factors which reflect construct (s) or different dimensions of construct (s). The Principal Component Factor analysis has been employed to further find out the most influencing attributes among all for selection of VAS applications. The scree plot between Eigen values vs. factor number (Figure 1.) by Varimax rotation method has shown four factors having Eigen value above 1 and from the fifth factor onwards almost flat line indicates that each successive factor is accounting for smaller and smaller amounts of the total variance.

FIG. 1: FACTORS DEDUCED BY FACTOR ANALYSIS



The “Mobile advertisement” (0.812), “Utility of the service” (0.791), “Discounts” (0.801) and “Availability on different modes”(0.746) have been suggested highly significant for the selection of VAS applications (Table 4.).

TABLE 4: FACTOR LOADINGS AND COMMUNALITIES BASED ON PRINCIPLE COMPONENTS ANALYSIS WITH VARIMAX ROTATION FOR FIFTEEN ATTRIBUTES

Attributes	Factor				Communalities
	I	II	III	IV	
Range of products(Assortment)		0.677			0.510
Utility of the Service		<b>0.791</b>			0.696
Reasonable price			0.751		0.650
Discounts			<b>0.801</b>		0.670
Value for money			0.691		0.567
Customer service				0.583	0.457
Availability on different modes				<b>0.746</b>	0.588
Promotional Offers	0.728			0.303	0.642
Product knowledge	0.664				0.528
Balance deduction with notification				0.382	0.345
Mobile advertisement	<b>0.812</b>				0.695
Content type	0.53	0.609			0.662
Content Localization	0.578	0.607			0.712
Technology-2G/3G/4G				0.615	0.404
Basic services like Network quality		0.645		0.359	0.576

Extraction method: Principle Component Analysis

Rotation Method: Varimax with Kaiser Normalization

## FINDINGS

The determinants of customer satisfaction in the technology driven innovations in competitive mobile communication services strongly depend on quality services viz. responsiveness, access reliability, security, credibility, price/tariff plans and fairness.

1. The study has shown that of the factors influencing the selection of Value Added Services in mobile telecom industry, by determining the relationship between two or more variables of which dependent variable is satisfaction and there are fifteen independent variables/ attributes by Regression analysis i) Content type ii) Value for Money iii) Promotional offers and iv) Utility of the Service having significant p-values in 0.005 to 0.034 being less than 0.05 are the most important.
2. The prominent factors determined by factor analysis for the selection of VAS and customer's satisfaction constitute i) Mobile Advertisement ii) Discounts iii) Utility of the Service and iv) Availability on different modes in 0.812 to 0.746 range.

The study can help mobile service providers to be significant differentiators by improving their services efficiently to come up to the satisfaction of customer's preferences and expectations of MVAS for their retention and sustainable growth of mobile commerce.

## RECOMMENDATIONS /SUGGESTIONS

As the Indian telecom industry is not only the second largest market, it is the fastest growing telecom market in the world, hence the room for growth is huge and Indian telecom prospects are extremely healthy. The telecom companies need to differentiate their product and services and collaborate by sharing towers and fibers because of capital-intense nature of industry. In order to offer real value to customers, telcos need to look at new opportunities such as cloud, datacenters, artificial and virtual reality data analytics as very soon voice as backbone of telecom is going to be replaced by data. The fluctuations in revenues as a function of market dynamics need to be tackled by creating an enabling environment for all telecom operators to grow by innovations and enhancing network security.

## CONCLUSIONS

The telecom industry has undoubtedly, brought revolutionary changes in our lives. The two major aspects of work viz. to determine the relationship between two or more variables (the dependent variable-Satisfaction and the independent variables comprising of other attributes) which influence the selection of value added services viz. Range of Products, Utility of the Service, Reasonable Price, Discounts, Value for Money, Customer Service, Availability on Different Modes, Promotional offers, Product Knowledge, Balance Deduction with notification, Mobile Advertisement, Content type, Content Localization, Technology -2G/3G/4G and basic services like Network Quality have been studied employing Regression Analysis. The significant p-value of attributes like utility of the service (0.034), value for money (0.015), promotional offers (0.026), product knowledge (0.018) and Content type (0.005) suggested that these are the influencing attributes for satisfaction level. The analysis of the prominent factors out of the list of total fifteen variables which influence the selection of value added services determined by factor analysis (Varimax rotation method) having Eigen Value above 1.0, constitute mobile advertisement, utility of service, discounts and availability on different modes.

## LIMITATIONS

The present study although carefully planned and executed yet has certain limitations:

- 1) The study undertaken is confined to urban population of Shimla (HP) hence the inference drawn may not be exact comparison for other geographical areas.
- 2) The respondents might not have expressed their real thoughts in the structured questionnaire.
- 3) The data collected may not have validity on account of the responses of respondents as a result of time constrained and their convenience.
- 4) The variables under study may be affected by external factors such as respondent's/ subscribers, device quality and type, limited availability of spectrum per operator in 2G/3G/4G bands, low coverage zones such as basements, high rise buildings, tunnels etc.

## SCOPE OF FURTHER RESEARCH

The advent of high speed data services and enhanced user expectations of getting real time on demand band width to run live applications has initiated new telecom policies focused on areas such as internet for all as well as new age technologies like 5G and internet of Things (IoT) also forming the basis of digital India. The continuous up-gradation of networking security aspects and skills development which require more investments in to telecom need to be looked into to expand telecom services in general and VAS in particular.

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