

DETERMINING THE CRITICAL SELECTION FACTORS OF MOBILE NETWORK OPERATOR USING IMPORTANCE-PERFORMANCE ANALYSIS AND GAP ANALYSIS FROM MANUFACTURING ENTERPRISE CUSTOMERS' PERSPECTIVE

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ABSTRACT: : In today's dynamic and competitive business environment, the survival and sustainability of a Mobile Network Operator (MNO) solely depends on the customers' perception on the performance of critical selection factors (CSFs). The identified critical selection factors are examined to understand their level of importance in 'selection of MNO' using Importance-Performance Analysis from manufacturing enterprise customers' perspective. The gap analysis is performed to identify the areas of improvement where the MNOs need to enhance their service delivery so as to retain their existing subscribers as well as to attract new customers. The extensive review of literature was coupled with in-depth interviews to design and develop the survey instrument. This descriptive research study adopted multi-stage and simple random sampling method to administer the field and e-mail survey to collect primary data. The sampling unit of analysis for this study was the manufacturing enterprise customers of leading MNOs who have subscribed for bulk post-paid enterprise mobile phone connections in Rest of Tamilnadu (ROTN) telecom circle. The Confirmatory Factor Analysis provided ten CSFs namely: network service, billing system, service encounter, technology, convenience, reputation, brand image, word-of-mouth recommendation, pricing and switching cost.

Key Words: mobile network operator, critical selection factors, importance-performance analysis, gap analysis, manufacturing enterprise customers.

Introduction

Generally, it is perceived in today's services marketing that selecting the right service provider is an important task for the customer as they have numerous choices to take a decision. But it is a challenging issue for them because the characteristics of services are different from physical products. So, understanding the enterprise customers' choice behaviour is essential for Mobile Network Operators (MNOs) that want to compete effectively in the highly competitive and complex Indian wireless mobile telecommunications service market. Though the enterprise customer segment represents a highly lucrative market, the manufacturing enterprise customers' needs are different from the services enterprise customers. The MNOs must explore such information that influence the buying behaviour of 'selection of MNO' of enterprise customers and understand the priority of their needs. This will guide the MNOs to formulate appropriate strategies for optimum allocation of available resource and, tactics to acquire new customers as well as to retain the existing customers. These efforts enhance the perceived experience of quality service performance of MNOs and improve customer satisfaction and loyalty.

This study attempts to identify the perceived level of expectation (importance) of various Critical Selection Factors (CSFs) that are considered in the decision making process of 'selection of an MNO' and compares the perceived level of experience (performance) for the same set of attributes of CSFs using Importance-Performance Analysis (Oh, 2001) from manufacturing enterprise customers' perspective. Consequently, a gap analysis was carried out to identify the areas of improvement where the MNOs need to develop their priorities in order to bridge the gap and to meet the customers' perceived expectations successfully.

Indian Mobile Telecommunications Market

The telecom sector continues to be a critical force for growth, innovation, and disruption across multiple industries. The Indian telecommunications service sector has been witnessing intense competition because of several structural and regulatory changes. India is currently the world's second-largest telecommunications market with wireless subscribers of 1,171.76 million by November 2018 (Telecom

and threats to its competitiveness. This suggests the highest priority in terms of investments to improve the performance of these attributes.

Quadrant III: '*possible overkill*'. The attributes are considered to be low importance to customers' purchase decision and are perceived to be performing well. This indicates possible waste of limited resources that are inefficiently used and could be reallocated elsewhere

Quadrant IV: '*low priority*'. The attributes are considered to be relatively unimportant to customers' purchase decisions and are perceived to be not performing exceptionally well. Therefore they represent minor weaknesses and poor performance is not a major problem. As a result they are likely to receive a low priority in resource allocation decisions.

The Gap Analysis

The Gap model proposed by Parasuraman, Zeithaml, and Berry (1985) is applied to examine the difference between the consumers' perceived expectations (importance) and perceived service experiences (performance) which are under the control of the service provider. The paired-sample T-test is a statistical technique used to determine whether the mean difference between two sets of observations is zero or not. It is applied when a set of observations are available to measure the same constructs but under different conditions from the same group of respondents. Arora, (2016) analysed the gaps in customer services of selected telecom service providers in national capital region of India,

Literature Review

There is a wide range of literature on consumer behaviour on intention to selection and/or switching of wireless mobile telecommunications service provider. Though there is a very limited body of knowledge regarding the enterprise customers' buying behaviour in wireless mobile telecommunications services industry, there are many studies (see, for example Thaichon, Sharma, Raina, & Kapoor, 2016; Kugyt & Šliburyt, 2007) available on the various critical factors that influence the buying behaviour of consumers and their expectation and/or experience of service quality.

Network service has been identified as the core service and a critical factor to measure customers' perceived mobile service quality, satisfaction and loyalty (Babic-Hodovic, Arslanagic-Kalajdzic, & Imsirpasic, 2017; Hosseini, Zadeh, & Bideh, 2013) and plays a major role in purchase decision of the services from an MNO (Thaichon et al., 2016). The *billing system* attributes are service quality dimensions that bring satisfaction to customers (Hosseini et al., 2013) and directly influence the customers' churn decisions.

The customer-employee interactions i.e., the *service encounter* occurs at three stages namely: enrolment of services, maintenance of services, and termination of services. The service encounter occurs for enterprise customers with the designated key account managers, the employees of customer care/help service system and, customer care/support system. Diligence, information communication, inducements, sportsmanship, and empathy are identified as the unique dimensions of salesperson service behaviour that are vital in consumers' evaluation of service quality (Ahearne, Jelinek, & Jones, 2007). Turnbull (1979) noted that buyers appear to value personal contacts, interpersonal communication channels, the ease of contact and availability of technical advice reduces their perceived risk. Responsiveness concerns the willingness or readiness of employees to provide service and reliability involves consistency of performance and dependability (Parasuraman et al., 1985).

The *technology* used must be accurate, consistent error-free, (or error levels can be maintained below a specified reliability threshold) user-friendly and reliable (Yang, Jun, & Peterson, 2004). Having up-to-date equipment, the technology (Rahhal, 2015) and the degree of personalisation offered by the technology (Bitner, Brown, & Meuter, 2000) are found as major criteria to measure the tangibility and reliability dimension of service quality. Personalisation can infer as the convenience and benefit of the use of technology. *Convenience* is evaluated by measuring a sufficient number of retailers or kiosks, sufficient methods and locations for bill payment and ease of subscribing and changing services (Hosseini et al., 2013; Gerpott, Rams, & Schindlerl, 2001). Facilitating single point of contact was observed as an important attribute for manufacturing enterprise customers from in-depth interviews. *Corporate image* is likely to play a major role in customers' choice decisions unless the competing services are perceived as virtually identical on performance, price, and availability (Andreassen & Lanseng, 1997).

Customers are more likely to perceive companies with good *reputations* by several interrelated features - credibility, reliability, responsibility, and trustworthiness (Fombrun, & Van Riel, 1997) which can enhance customers' expectation of corporate capability in providing excellent products or services, and integrity in fulfilling formal contracts or announced promise. When coupled with high corporate abilities, a firm's Corporate Social Responsibility (CSR) actions are more likely to generate favourable attributions and

consumer identification (Luo & Bhattacharya, 2006). In business to business context, the buyers' *Word-Of-Mouth* concerning the selling firm is characterised by the buyer's favourable recommendation to other buyers about the company (Swan & Oliver, 1989). The influencers are very likely to communicate and recommend to other members of buying centre by virtue of their involvement in the product category (Blackwell, Miniard, & Engel, 2001).

The competitiveness of telecommunication service providers is offering enough choice of *pricing plans* to customers (Hosseini et al., 2013). Business consumers have heterogeneous preferences, and the complexity and multidimensionality of the cellular service offerings need to cater to these heterogeneous preferences (Fibich, Klein, Koenigsberg, & Muller, 2017). Burnham, Frels, and Mahajan, (2003) provides a comprehensive categorization of switching costs dividing them into three dimensions: *procedural* – involving economic risk, search and evaluation and learning costs, *financial* – involving the loss of financial benefits and *relational* – involving psychological or emotional discomfort resulting from breaking bonds of affection with the provider's staff or with the service brand.

Formulating Hypothesis

Based on the limited evidences obtained from extent review of literature and one-to-one in-depth interviewing of manufacturing enterprise customers of leading MNOs, the below-listed hypotheses were formed to meet the research objectives of this study.

1. The factor network service (NS) influences the 'selection of an MNO'.
2. The factor billing system (BS) influences the 'selection of an MNO'.
3. The factor service encounters (SE) influences the 'selection of an MNO'.
4. The factor technology (TL) influences the 'selection of an MNO'.
5. The factor convenience (CV) influences the 'selection of an MNO'.
6. The factor reputation (RP) influences the 'selection of an MNO'.
7. The factor brand image (BI) influences the 'selection of an MNO'.
8. The factor word of mouth recommendation (WoM) influences the 'selection of an MNO'.
9. The factor pricing (PR) influences the 'selection of an MNO'.
10. The factor switching cost (SC) influences the 'selection of an MNO'.

Methodology

The Primary data is of paramount importance for this study due to minimal published literature on the buying behaviour of enterprise customers in wireless mobile telecommunications service industry. In-depth interviewing on a one-to-one basis (Seidman, 2013) with an open-ended questionnaire was adopted with the knowledge gained from review of literatures. The information gathered during the two semi-structured in-depth interviews were used to prepare questions in a specific order for conducting structured in-depth interviews. Later, structured in-depth interviews were conducted to judge the applicability of instrument items. To the nature and complexity of the research topic and objectives, the data saturation for the most part, occurred by the time analysed twelve structured interviews with manufacturing enterprise customers. Suggestions from in-depth interviews led to few changes and little modification to increase the clarity in the questionnaire. Then a pilot study involving 15 manufacturing enterprise customers was conducted using the modified questionnaire. Subsequently, the questionnaire was prepared with seven-point scale in Microsoft Excel. The population being studied belong to enterprise customers of leading MNOs in ROTN telecom circle. A Two-stage and simple random sampling method was adopted for this study. The samples are chosen from the pre-existing groups i.e., the enterprise customers of MNOs in ROTN and then the individuals (i.e., the key contact persons) are used for the study. It was found from the field that some of the companies were not in operation and some have not availed the post-paid mobile enterprise services. Hence the reliable source list was prepared with the help of the employees of MNOs from 58,279 ROTN listed enterprise companies (information obtained on 14th March 2018 from www.mca.gov.in). Then a source list was prepared containing 27,684 manufacturing enterprise companies of ROTN. The minimum number of sample size 189 was derived from the formula $N = Z^2 p (1-p) / e^2$ considering the final source list of 1285 companies. The primary data was collected following nonprobability convenience sampling technique. 28.06 percent of data was collected by personal visits to manufacturing enterprise customers' premises. The rest 71.94 percent of data was collected through mailing the questionnaire to the key contact persons of the company who involve in the process of selection of an MNO and coordinates the post-purchase transitions. After disqualifying 28 responses of e-mail survey, a total of 196 responses were considered for further analysis.

Data Analysis – Identifying Factors

The results obtained from 196 respondents were analysed using IBM SPSS v23 to explore the underlying association between the 51 items. The scale reliability (α) for derived constructs ranged between 0.812 and 0.922. A one-factor analysis was carried out to measure construct validity and sampling adequacy applying Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. The KMO measurements varied between 0.808 and 0.926. The KMO statistics indicate that all constructs are above the most recommended minimum acceptable value 0.600. The variances of each constructs i.e. the eigenvalues are higher than 1.00 for all constructs. The extraction of sums of squared loadings for all ten constructs was above 73 percent. In this process, all 51 items were highly significant enough to the established 10 constructs namely network service (NS), billing system (BS), service encounter (SE), technology (TL), convenience (CV), reputation (RP), brand image (BI), word of mouth recommendation (WoM), pricing (PR) and switching cost (SC).

To test the hypothesis and to validate the causal relationship between the ten identified constructs and the factor 'selection of MNO' the researcher first carried out Confirmatory Factor Analysis using SPSS Amos v23. The direct effect i.e. the standardised factor loadings (λ) of independent variables (unobserved, exogenous variables) on dependent variables (observed, endogenous variables) ranged from 0.725 to 0.980. This indicates the stronger affiliation of an item to a specific factor. Moreover, no indirect effects of these items were observed on respective constructs. It is observed from the SEM model that all ten factors namely, NS, BS, SE, TL, CV, BI, RP, WoM, PR and SC directly, positively and significantly influence the buying behaviour of manufacturing enterprise customers in the decision making process of 'selection of MNO'. All ten constructs are found to be independent variables (observed, exogenous variables).

Table-1 : Regression weights and other associated test statistics

Structural Path	Std. Regression Estimate	S.E.	C.R.	P	Remark
NS → Selection of MNO	0.154	0.035	4.393	***	Sig.
BS → Selection of MNO	0.090	0.034	2.662	0.008	N.Sig
SE → Selection of MNO	0.146	0.031	4.638	***	Sig.
TL → Selection of MNO	0.113	0.041	2.756	0.006	N.Sig
CV → Selection of MNO	0.126	0.031	4.047	***	Sig.
RP → Selection of MNO	0.166	0.036	4.607	***	Sig.
BI → Selection of MNO	0.201	0.035	5.657	***	Sig.
WoM → Selection of MNO	0.157	0.030	5.226	***	Sig.
PR → Selection of MNO	0.095	0.030	3.132	0.002	N.Sig
SC → Selection of MNO	0.071	0.027	2.650	0.008	N.Sig

Sig.- Significant; N.Sig.- Not Significant.

Source : Primary data

Moreover, the values of all critical indices of the default model (CMIN/DF-2.476; GFI-0.981; NFI-0.975; IFI-0.958; CFI-0.984) are very close to unity (one), and the value of RMSEA (0.064) and SRMR (0.0736) are also very close to zero. These indices favoured the model validity.

It is observed from the above-shown table-1 that the critical ratio (C.R.) is greater than 1.96 for all structural paths. The three asterisks (***) indicate that the probability (p-value) is smaller than 0.001. This means the probability of getting a critical ratio value greater than 1.96 for the structural paths [(NS, SE, CV, RP, BI and WoM) → selection of an MNO] in absolute value is less than 0.001 at 99.99 percent confidence level. The probability of getting a critical ratio value greater than 1.96 for the structural paths [(BS, TL, PR, and SC) → selection of MNO] is significant at 99.95 percent confidence level. Thus all hypotheses were proved using SEM technique that there is a direct, positive and significant relationships between each constructs and 'selection of MNO'.

Identifying Critical Selection Factors (CSFs) using Importance-Performance Analysis

Table-2 : Importance versus Performance

Constructs	NS	BS	SE	TL	CV	RP	BI	WoM	PR	SC	Grand mean
Importance - Mean	6.073	5.967	5.963	5.944	5.953	6.096	6.066	5.816	6.009	5.651	5.954
Std. Regression estimate	0.166	0.105	0.174	0.117	0.151	0.177	0.212	0.200	0.109	0.080	0.149
Performance - Mean	5.740	5.710	5.610	5.980	5.710	6.080	6.150	5.870	5.900	5.640	5.839

Source : Primary data

The standardised regression weight estimates of all ten constructs that formed the structural path with 'selection of an MNO' and the self-stated (explicit) means of importance and performance scores are given in above shown table-2. To understand the nature and magnitude of the relationship between the importance and performance for the different identified CSFs, the IPA was carried out to produce matrixes. First, the IPA matrix was produced as shown in below given figure-2 by plotting the different CSFs using the means of customers' self-stated (explicit) importance and performance scores. Consequent to the criticisms raised by many researchers (for example Ho, Feng, Lee, & Yen, 2012; Gustafsson & Johnson, 2004) for using explicit scores of importance as coordinates, the IPA matrix was produced once again as shown in below given figure-3 using statistically inferred (implicit) scores of importance and the means of performance. The factors' positions shown in below given figures-2 and 3 have an orientation of median values and consequently, the axes were defined by the overall mean values and the factors are defined by the overall averages.

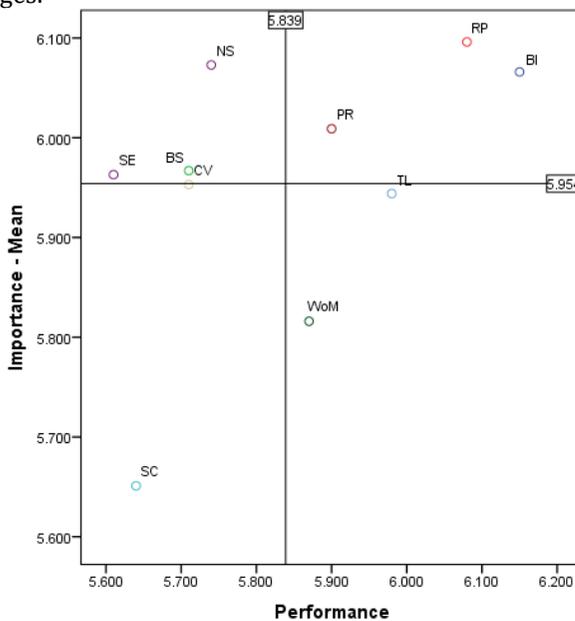


Figure-2: IPA - Using explicit importance

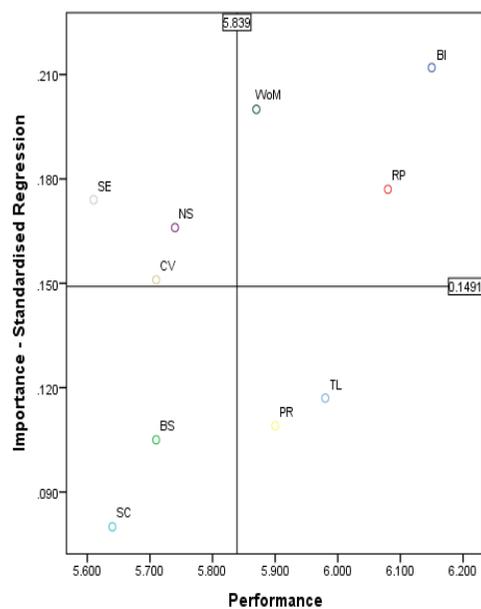


Figure-3: IPA - Using implicit importance

The above shown IPA grids (figure-2 & 3) were examined for the positions of different plotted factors and the summary of the factors' positions are given in the below shown table-3. It is found from table-3 that the critical selection factors PR (from quadrant 1 to 3), BS (from quadrant 2 to 4), WoM (from quadrant 3 to 1), and CV (from quadrant 4 to 2), have altered their positions when IPA was carried out with the scores of implicit importance.

Table-3 : IPA Matrix - Position of factors

* Based on explicit means of importance			
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Keep up the Good Work	Concentrate Here	Possible Overkill	Low Priority
BI	NS	TL	CV
RP	SE	WoM	SC
PR	BS		
* Based on implicit means of importance			
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
BI	NS	TL	BS
RP	SE	PR	SC
WoM	CV		

Source : Primary data

Table-4 : Paired-Samples T test

Constructs	t value	Sig.	Remarks
NS-NS	4.226	0.000	Sig.
BS-BS	2.882	0.004	Sig.
SE-SE	4.464	0.000	Sig.
TL-TL	-0.410	0.682	N.Sig.
CV-CV	2.467	0.014	Sig.
RP-RP	0.218	0.828	N.Sig.
BI-BI	-1.191	0.235	N.Sig.
WoM-WoM	-0.546	0.586	N.Sig.
PR-PR	1.379	0.170	N.Sig.
SC-SC	0.092	0.927	N.Sig.

Sig.- Significant; N.Sig.- Not Significant.

Source: Primary data.

Identifying the GAP

It is found from Paired-samples T-test outputs (table-4) that at 95 percent confidence level, the level of significance (α) for constructs NS, BS, SE, and CV is less than 0.05. This means that there is a significant difference between the respondents' perceived expectation (importance) before the decision to select an MNO and perceived experience (performance) after using the services of the chosen MNO for constructs NS ($t = 4.226$), BS ($t = 2.882$), SE ($t = 4.464$), and CV ($t = 2.467$). A positive 't' value means that the respondents have given a higher level of opinion for importance and a lower level of opinion for performance. It is found that the respondents have given the lowest level of opinion of importance and performance for construct SC. The MNOs perform well above the perceived level of expectations of enterprise customers for factors BI, WoM and TL. Wider gaps were observed for factors SE and NS which are perceived to be important in the decision-making process of 'selection of MNO'

Findings and Discussions

The responses of 51 items were skewed towards being important considerations to identify 10 critical selection factors namely: network service (NS), billing system (BS), service encounters (SE), technology (TL), convenience (CV), reputation (RP), brand image (BI), word-of-mouth recommendation (WoM), pricing (PR) and switching cost (SC). The results of implied importance based importance-performance analysis were considered to derive the findings of this study. It is found that all CSFs directly, positively, and significantly influence the buying behaviour of manufacturing enterprise customers decision of 'selection of MNO'.

The factor BI emerged as the most important criterion that influences the intention of 'selection of MNO'. This clearly shows that in a business buying situations, customers prefer stronger brands to minimise their perceived risks (Webster & Keller, 2004) as *brand image* increases purchase confidence (Romaniuk & Nenycz-Thiel, 2013) and reduced search and transaction costs (Kotler & Pfoertsch, 2007). It is observed that the CSFs SE, NS, CV, TL, and PR are actively controlled by the MNOs in wireless telecommunications industry and also guided by the regulatory body of the government. The position of factors BI and RP (quadrant I) in IPA matrix implies that the MNOs are performing significantly well on BI and RP, and shall continue their performance in *keeping up the good work* in order to improve the perception of performance in the minds of the customers. The shift of position of WoM from quadrant III to quadrant I in IPA matrix implies that WoM behaviour is extremely important in mobile service industries. The importance of recommendations or WoM has greater effect in the formation of attitudes in wireless mobile telecommunications service purchase decision making (Dierkes, Bichler, & Krishnan, 2011). Surprisingly enough RP built by the customers' experiences and WoM (recommendation by others) are found to enhance the perception about the MNOs in the minds of customers. The MNOs shall continue to involve and invest in brand image and reputation building activities to generate positive WoM behaviour which can be a useful and effective promotional tool (Mak, Wong, & Tong, 2011). The factors NS, BS, SE, CV, and TL are experienced by the customers only after the purchase of services. The factor NS is core service and the failure of MNOs in delivering the core service lead to negative WoM. Though the factor BS is appeared to be relatively lower in importance due to the shift of its position (from quadrant II to

quadrant IV) in IPA matrix, the MNOs shall provide a transparent and accurate billing as the perception of value proposition of the services experienced will directly influence the churn decision of customers (Santouridis & Trivellas, 2010). It is found that the factor BS again depends on the pricing (tariff plan) plans of MNOs and the ability to meet the heterogeneous requirement of an enterprise customers. The use of multiple mobile connections and services bring a greater deal to the enterprise subscribers as they need to monitor and control conveniently all the subscribed employees' connections. The positive experiences of CV directly influence customer satisfaction. The MNOs should perform good enough to improve the perception of performance of factor CV, as the implicit importance reflects the critical importance of CV (quadrant II) in the decision making process. It was found that almost all customer-employee interactions i.e., service encounters happen through the Key Account Managers who facilitate the links between the customers and the selling firm (Homburg, Workman, & Jensen, 2002). The positive outcomes of SE for a particular context in the customer relationship life cycle with an MNO will directly and significantly influence the decision-making process of 'selection of MNO'.

The factor TL enables the MNOs providing the core services as well as other technical/functional service. It is also observed that the perception of functional quality, technical outputs and the overall quality assessment of mobile services depend on the factor technology (Babic-Hodovic et al., 2017). Though the factor PR seems to be lower in importance (quadrant III) it is observed that the MNOs are perceived to be performing well in meeting the customers' expectations. The factor PR's shift in position can be inferred as when the technical/functional offerings of MNOs are perceived to be very similar (or not much difference) the factor PR comes to play a critical role in the decision-making process of 'selection of MNO'. The factor SC acts as a 'mooring factor' which is measured by the customers' attitude towards switching, the costs involved in switching, prior switching experience and variety seeking (Segoro, 2013). In addition, the factor SC has a significant moderating effect on the relationship between other factors and the buying/switching intentions. Today, in the highly competitive oligopolistic Indian wireless mobile telecommunications industry almost all MNOs offer similar kind of services/products, and the entry cost is almost nil for a customer. This has impacted greatly the importance of SC and its attributes such as the financial and procedural cost. In such situations, the attribute 'relational cost' of SC comes to play a vital role in building the switching barrier.

Limitations and future research directions

This study was empirically tested using the data collected during May-December 2018 from the manufacturing enterprise customers across ROTN telecom circle. The study could be different for another segment of customers in the mobile telecommunications service sector and also in other service industries. In the interest of generalisation, future research should be conducted to test the findings of this study in other customer segments in a different part of the country. Future research should investigate these critical selection factors and their elements in order to better understand the effects on customers' intention to select an MNO in a more challenging customer environment, which may even bring out new attributes.

Managerial Implications and Conclusion

The mobile telecommunications service sector has been witnessing high switching rates (TRAI, 2018) post implementation of national level mobile number portability. This study was undertaken to investigate and understand the various critical selection factors that are considered to be important in the selection process of an MNO and also the perceived performance of MNOs on those CSFs from manufacturing enterprise customers' perspective. In general, the customers' perception is widely varied in accordance with the ten factors that were constructed from 51 attributes.

As there is a significant difference between the customers' perception on importance and performance on factors NS, BS, SE, and CV the MNOs shall increase efforts to improve these factors' performance. These service attributes are often considered as the basic facilities offered to the customers. Some studies reported that companies that invested in service attributes in Quadrant II did not experience an increase in customer satisfaction. (e.g. Sampson & Showalter, 1999; Mittal, Ross, & Baldasare, 1998). However, the MNOs shall continue to 'Concentrate Here' as these factors build the overall perception and provide opportunities to gain or maintain competitive advantages. The MNOs should strategically approach the factors TL and PR, as the factor TL determines the core and/or technical and functional service delivery and the factor PR determines the revenue of the service provider. The IPA technique has helped to divide the CSFs into four identifiable quadrants which formed a foundation for MNOs to better understand how enterprise customers perceive their products/services and to develop customer acquisition and retention strategies. Hence, this study could contribute to further research studies in the area of consumer decision-process theory.

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