Research Article

Proposed Model for Measuring Customer Satisfaction with Telecommunications Services

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Abstract

The aim of this article is to propose a model for measuring customer satisfaction in users of telecommunications services. The methodological design is quantitative descriptive and explanatory type, using a survey as data collection tool, with a sample of 415 users of telecommunications services (landline telephone, television and Internet services) in the city of Medellín. Among the results, it is found that the service in the Call Centers and timely response to requests, inquiries, or complaints, and an effective service are among the factors that have the most influence in the satisfaction of users of telecommunications services. In addition, it is noted that the perception of a favorable cost-benefit services is influenced by the offered plans and promotions, and the proper settlement of claims and applications in their companies, showing that these are issues that need to be strengthened in telecommunication services companies.

Keywords: telecommunications services; customer satisfaction; service quality; perceptions

1. Introduction

The service sector is increasingly more relevant in the modern economy, contributing to the increase in gross domestic product and employment generation (Bosworth & Maertens, 2010). One of the most important services worldwide is the telecommunications sector, and with advances in technology, it is expected that companies that belonging to this industry provides a better experience for their users (White & Rivero, 2009; Lu, Zhang & Wang, 2009). In this context, the evolution of mobile networks has shown the need to provide services to users with a high added value given that this sector is an increasingly mature market, so the added value services appear more evenly. Therefore, it becomes more complex to get new customers and retain existing ones (Kim & Lee, 2010). Accordingly to this statement, the customer satisfaction becomes a key factor for providers of telecommunications services, where marketing tool allows different companies maintaining and improving their market share while generating higher returns (Zhao, Lu, Zhang & Chau, 2012).

In this vein, among the factors that have greater strategic importance in developing activities to evaluate the service experience, the literature has focused on quality and satisfaction (Deng, Lu, Wei & Zhang, 2010); and to support this approach, it is part of the idea developed by Bitner, Faranda, Hubbert & Zeithaml (1997) which states that service experiences are the result of interactions between organizations, processes, related systems, employees that provide the service, and customers (Lehtinen & Lehtinen, 1982). Thus, quality and satisfaction have been recognized as major evaluations of consumer experiences (Zeithaml *et al.*, 2002) that measure the aspects of customer interaction with products and services (Hellén & Gummerus, 2013).

In response to this need, this article aims to propose a model for measuring satisfaction in users of telecommunications services. Initially, a theoretical review of the most important concepts on measuring service satisfaction are taking into account from the review, showing the differences between quality and satisfaction. Subsequently, the methodology is set out to reach the proposed model, , to test each hypothesis of the model, a convergent and discriminant validity analysis are carried out. Finally, this article presents conclusions and implications on the proposed model in the telecommunications services sector.

2. Theoretical Framework

Meeting the customers' needs and satisfaction are the key exchanges between the companies and the market, and since the beginning of marketing, satisfaction has been regarded as the determining success factor of markets, making it one of the topics that has the most interest in marketing literature (Oliver, 2014; Valencia, Salazar & Ovalle, 2013). Therefore, definitions of satisfaction are abundant, they suggest , in order to identify the background of this phenomenon, satisfaction is the result of the evaluation of an experience, referring to the nature of the response, either cognitive, emotional or a combination of both (Saura, Perez, Contri & González-Gallant, 2006). Therefore, satisfaction has been defined as "a global measure of a set of satisfactions with specific previous experiences" (Yu & Dean, 2001: 235). Furthermore , Jones and Suh (2000) suggest that satisfaction defined from this point of view, explains clearly the behavioral intentions of the different types of users.

In addition, researches have been conducted in the field of purchase through physical channels, which consider customer satisfaction as a trial of cognitive-affective and relative nature, as the result of a comparison between a subjective experience and a previous baseline (De Rojas & Camarero, 2008).

Also, the literature has noted the existence of difficulties in defining the concept of satisfaction, since to explain it or define it, researchers make constant references to quality and value, generating real conceptual networks (Kuo, Wu & Deng, 2009). For this reason, conducted studies around the satisfaction measurement have focused both on increasing knowledge about the nature and content of the constructs that measure it (satisfaction)(intravariable perspective) and analyze the associations that may exist between all of them (intervariable perspective) (Saura *et al.*, 2006).

To understand these concepts is essential to do the study of the subsequent value that establishes the relationships between satisfaction and quality. In particular, marketing literature has focused on researching the differences and the causal order between them (Ortiz, Toraya & Femat, 2015). According to Cronin, Brady & Hult (2000), three distinct positions in the literature have been taken into account: (1) suggesting the lack of relationship between quality and satisfaction: either of them can be antecedent of the other; (2) suggesting that satisfaction acts as a history of quality and (3) the dominant position, which establishes the inverse causal order, being satisfaction the consequence of quality. Meanwhile Caruana (2002) suggests that the most notable distinction is in the expectations, which by referring to the quality of service, refers to normative expectations, in other words, the "ideal"; while expectations in terms of the satisfaction are considered predictive (Parasuraman, 1988; Rego, Morgan & Fornell, 2013).

Under this scheme, it can be inferred that there are many approaches that have existed in literature against the perception of users regarding the offered service. However, Oliver (1999; 2014) has established two approaches to the concept of value: the first one, observes the value in the line of quality or utility, as a one way cognitive perception; the second one, understands the value in a bidirectional way, using the term "trade-off" as equivalent to compensation or balance.

In the line of value in a bidirectional sense, the most basic approach is the trade-off between quality and price (Monroe, 1995; Bansal & Taylor, 2015), since it is the conceptualization of "value for money" proposed by Fornell *et al.* (1996) where they estimate that the model to assess customer satisfaction index should be supported on three main pillars, contained in the following aspects: 1) customization service, 2) identifying customer expectations; and 3) the perceived quality, value and prices offered to the user. However, there is an increasingly rate of authors, who point out that this view is too simplistic and is only a particularization of the value notion (Bolton & Drew, 1991; Ortiz, Esquivel & Hernández, 2016), being necessary to grasp the meaning of the construct, more sophisticated measurement settings,

that establish a most adequate correlation between levels of perceived performance with assessments of quality and value. It is suggested therefore, that the perceived value can be seen in the line of Zeithaml's proposal (1988), as "an overall assessment" that the customers develop about the usefulness of a product or service, based on perceptions of what they have received versus what it has given to them. Thus, the value is a positive function of what is received and a negative function of what is sacrificed, but it can denote value to exclusively positive or negative perceptions (Holbrook, 1999; Hoyos & Valencia, 2012).

Now, the reason why companies focus on combining processes, skills, and assets, translated in the need of creating a sustainable competitive advantage, aimed to differentiation; and where the consumers' judgment about excellence or superiority of the services plays a key role (Kandampully & Hu, 2007). It is for this, the reason that telecommunications industry has developed several models to assess the perceived experience of the customer compared with the service provided. One of the most relevant is proposed by Oliver (1999), in which three conditions are established and they must be converge to create a link between the company and the consumer, and open place to loyalty: 1) consumers or users should have information on the brand that outrank competitive offerings (i.e. cognitive loyalty); 2) the pleasing or favorable attitude of the consumer must be superior to other competitive offerings (i.e. emotional loyalty), in order for the existence of an affective preference of the chosen brand derived from satisfactory encounters; 3) the consumer or user that needs to make a purchase, he should try to buy the brand of choice compared to other alternatives (i.e. conative loyalty) (Castañeda-Garcia, 2005).

On the other hand, theories that are based on the study of the value based on quality service have been arisen, for which they think that "SERVQUAL" provides an appropriate approach for quality assessment (Xiao-Ping & Mei-Lu, 2014). The model presents an adaptation of the scale, which proposes an overall quality service measuring, taking into account five dimensions that contribute to the construction of quality service (tangibility, responsiveness, reliability, security and empathy) and measures both performance expectations and quality of the service. This scale is used in different studies, although it has been questioned about its conceptual framework and measurement method, reason why Cronin and Taylor (1992) developed a similar measurement system called SERVPERF, unlike the one raised by Parasuraman (1988) , which consists only on performance´s measurements putting aside consumer´s expectations (Cronin & Taylor, 1992; Tabaku & Cerri, 2015).

Thus, it is considered that customer satisfaction is a prerequisite for both studies measuring, the quality of service and those who evaluate customer loyalty (Tabaku & Cerri, 2015). In some studies developed by Caruana (2002) have shown the mediating role of customer satisfaction on the link that involves quality of service and customer loyalty, where quality it is seen as an antecedent of customer satisfaction. Similarly, Turel and Serenko (2006) indicated that quality service and customer satisfaction have a positive effect on retention and loyalty. Finally, the former idea shows that customer satisfaction has been considered the result of a cognitive process, formed from a set of factors of knowledge and which are also incorporated affective and emotional aspects experienced by consumers (Castañeda-Garcia, 2005).

3. Methodology

The methodological approach of this research is descriptive-explanatory with a quantitative type in order to propose a model for measuring satisfaction in users of telecommunications services. This research uses the cross sectional method in collecting information. The sample is selected by criteria, taking as inclusion criteria that respondents should be living in the city of Medellin, and they had in their telecommunication package the three basic telecommunication services: landline telephone, TV and internet. A survey was applied to 415 individuals of the 6 socioeconomic strata. The sample was calculated according to the number of houses in the city of Medellin regarding to the study of quality of life conducted by Medellin's town hall (MCV, 2015).

Primary sources were used, represented by users who were surveyed directly. For the data collection, a self-administered questionnaire was used through the 5 levels of Likert scale, with 57 questions. The information was collected by direct surveys in the users' home and in different socioeconomic strata. To avoid information bias, a pilot test was applied with 20 users with similar characteristics of the sample; with the purpose of test the next aspects: instrument, targeted population reactions, and the required time for the preparation of the sample. Later, pollsters were trained on gathering information procedures.

The analysis of results were initially raised with an Exploratory Factorial Analysis, in order to get a basic structure of the theoretical model to present and then validate it with Confirmatory Factorial Analysis. The performed procedure assumed to analyze each set of variables according to the following: first, the Exploratory Factorial Analysis was applied to the entire group of variables,. using Maximum Likelihood (ML) as an factors extraction procedure, and choosing VARIMAX as a rotation procedure, for which the SPSS (IBM Corporation, 2015) statistical software was used; second, a

model which seeks to validate eight hypotheses, according to the factors was obtained after carrying out the Exploratory Factorial Analysis, finally is expected to corroborate the factorial structure of obtained standardized loads for each variable through the use of Confirmatory Factorial Analysis.

To address this issue and with the idea to clarify the factorial structure, a rotation axis was carried through the Varimax method (method of orthogonal rotation that minimizes the number of variables that have high loadings on each factor) and it was obtained that the 57 analyzed questions are grouped into nine components or factors, as outlined below:

- 1st Factor - Call Center Service (CCS): it is associated with variables related to call centers service satisfaction offered by the telecommunication service companies. the evaluated services respond to aspects such as: the waiting time to listen to the options menu, the clarity of the menu, the kindness of the staff who answers the call, the knowledge among advisers about the services provided by the company (which includes offers and promotions), the waiting time for resolving customers concerns and the overall service provided by the call center.
- 2nd Factor-Telephone and Television Service (TTS): the variables grouped this factor correspond to those that evaluates user satisfaction with telephone and television services, that is why each item is responsible for measuring the perception of customers of the clarity and sharpness of the signal and communications in general, with no cuts or interruptions, and review the quality of additional services and the equipment used for those purposes.
- 3rd Factor- Users satisfaction with the service provided (USP): it refers to the satisfaction experienced by users at the Customer Care Center from different companies of telecommunications services, in order to identify opportunities, to offer and introduce best services and business practices. In this regard, items related to the location, accessibility, timeouts, kindness, respect, attention and interest provided by the customer service advisor are evaluated. In this way, it is possible to meet the different needs of users related to service, and proposing improvement actions.
- 4th Factor- Responses to questions, requests or complaints (RQC): this factor has the responsible variables of evaluating all related issues according to responding requests, inquiries or complaints. The purpose of these variables is to identify how quickly the advisors or the company gave response to customer concerns and ensured the compliance promised to solver their applications. The evaluation and monitoring of the above items are essential to compete in a changing and competitive environment like the current one, since the speed of the company responses to the rapid changes in the market is evaluated, and how it will generate a positive image of the company in the mind of the current and potential customers.
- 5th Factor- Service and Promotion plans (SPP): associated to variables related to plans and promotions that the company integrates to its market strategy, specifically in the field of the easiness to purchase new services or make changes to the ones already acquired, compliance of the plans and promotions, and the variety and availability in additional services offered.
- 6th Factor- Cost- Benefit perception of the service (CBS): the variables contained in this component corresponds to the cost-benefit analysis, in which the relationship between the service provided and what the client pays for purchase is evaluated. This factor is relevant, since a large percentage of consumers move to the competition due to the perception of receive a low level of profits made by the company, and at this point it is considered that a good combination between listening the customers' views and offer a good service, it is usually a key to success.
- 7th Factor- Internet Service (IS): this factor has the responsible variables for measuring customer satisfaction against providing internet service.
- 8th Factor- Customer Care Center (CCC): this component consists of two items related to satisfaction experienced by users facing the Customer Care Center, based on two fundamental axes: on the one hand, the location of the CCC, and the other hand, its accessibility.
- 9th Factor- IT Services (ITS): this component is associated with variables related to the compliance of the service provided by the company, where it is measured: the correct dress code of the technical staff, their friendliness and knowledge to address the concerns of users.

Having these factors clear, the model is proposed to assess the level of user's satisfaction with the service provided by telecommunication service companies (see Figure 1)
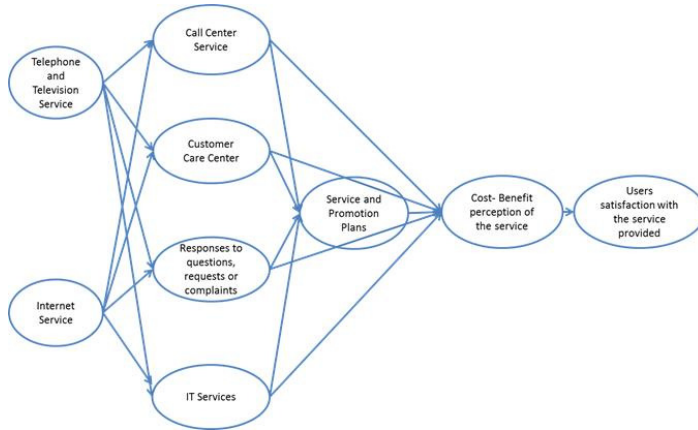
Figure 1: proposed model for measuring the satisfaction in users of telecommunications services.

Once the Exploratory Factorial Analysis (EFA) was carried out, the Confirmatory Factorial Analysis (CFA) was also performed as a standard practice to obtain validity evidence of theoretical models based on the results of Exploratory Factorial Analysis (EFA). Confirmatory Factorial Analysis (CFA) is usually used to demonstrate the validity of the previous obtained structure in the EFA and therefore the validity of the theoretical inferences drawn from it, i.e., the obtained models with EFA are usually validated with CFA (Moscoso, Gil & Rodríguez, 2000). According to the above, the prior procedure that was carried outconsisted in validating the scales in which the information and the reliability of the measuring of the used instrument was measured.

4. Analysis of Results

For the initial data analysis, the Exploratory Factorial Analysis (EFA) was applied, with which the set of multivariate interdependence statistical methods is designated, whose main purpose is to identify a factorial structure underlying a wide range of applied data (Pérez & Medrano, 2010) and it is one of the most used statistical methods in social science research, since whose contribution to scientific knowledge is to facilitate the analysis of patterns of interaction between variables, reduce data, classify and describe them (Frías-Navarro & Pascual, 2012), procedures that are necessary when it is analyzed the common variance for all variables, and thereby minimize the number of variables in a high load factor, thus improving the interpretation of factors. (Moscoso, Gil & Rodríguez, 2000).

4.1 Convergent Validity

It should be noted that the reliability model is evaluated at two levels: firstly, the reliability of observable items; and secondly, reliability of the constructs is assessed (Calvo, Martínez & Juanatey, 2013). To determine their impact on the model, it has been suggested that a reliability more than 0.6 is considered as evidence that the model is reliable (Bagozzi & Yi, 1988). Also, the reliability of the constructs refers to the degree in which an observable variable reflects a considered factor is acceptable by construct with an average value greater than 0.7 (Hair, Anderson, Tatham & Black, 2001). In the current study, it was not necessary to remove any of the items, since the standardized factor loading meets in the evaluation criteria, was established by the previously cited authors (see Table 1).

Table 1: Convergent validity of standardized factor loadings. Source: prepared by the authors with the support of statistical software SPSS.

Construct	Item	Standardized Factor Loadings	Average of Standardized Factor Loadings
Customer Care Center (CCC)	CAS1	0.959	0.959
	CAS2	0.959	
Cost- Benefit perception of the service (CBS)	SCB1	0.805	0.766
	SCB2	0.661	
	SCB3	0.774	
	SCB4	0.805	
	SCB5	0.779	
	SCB6	0.805	
	SCB7	0.735	
Call Center Service (CCS)	CCS1	0.835	0.848
	CCS2	0.809	
	CCS3	0.830	
	CCS4	0.829	
	CCS5	0.832	
	CCS6	0.885	
	CCS7	0.882	
	CCS8	0.867	
	CCS9	0.857	
	CCS10	0.852	
Responses to questions, requests or complaints (RQC)	SCR1	0.902	0.833
	SCR2	0.906	
	SCR3	0.902	
	SCR4	0.880	
	SCR5	0.903	
	SCR6	0.504	
Internet Service (IS)	SI1	0.917	0.800
	SI2	0.913	
	SI3	0.518	
	SI4	0.852	
Service and Promotion Plans (SPP)	SPP1	0.834	0.804
	SPP2	0.532	
	SPP3	0.844	
	SPP4	0.868	
	SPP5	0.842	
	SPP6	0.883	
	SPP7	0.828	
IT Services (ITS)	ST1	0.741	0.845
	ST2	0.854	
	ST3	0.901	
	ST4	0.884	
Telephone and Television Service (TTS)	STT1	0.713	0.704
	STT2	0.685	
	STT3	0.663	
	STT4	0.786	
	STT5	0.746	
	STT6	0.747	
	STT7	0.585	
Users satisfaction with the service provided (USP)	SUP1	0.807	0.787
	SUP2	0.886	
	SUP3	0.581	
	SUP4	0.845	
	SUP5	0.858	
	SUP6	0.888	
	SUP7	0.890	
	SUP8	0.870	
	SUP9	0.851	
	SUP10	0.389	

Source: prepared by authors with the support of statistical software SPSS

Subsequently, it is presented in Table 2 the Bartlett's sphericity test and the Kaiser-Meyer-Olkin (KMO) measurements, as they are the statistics related to the study of the adequacy of the model sample. Considering that the proposed model presents a Bartlett's values equal to zero and KMO equals or above 0.500. It can say that there are significant correlations between variables (Lévy, Martin & Roman, 2006). As evidenced, Table 2 shows the given coefficients by the SPSS software for each of the factors, it meets the above criteria, indicating that it is feasible to perform technical data reduction, and thereby, identify factors that influence the perceptions of different users from the level of satisfaction with the services provided by telecommunications companies (telephone, television and Internet) in the city of Medellin.

Table 2: Convergence validation of KMO and Bartlett's sphericity test

Factor	KMO value	Bartlett value	Meets Criteria
CCC	0.500	0.00	Yes
CBS	0.907	0.00	Yes
CCS	0.941	0.00	Yes
RQC	0.905	0.00	Yes
IS	0.736	0.00	Yes
SPP	0.917	0.00	Yes
ITS	0.811	0.00	Yes
TTS	0.792	0.00	Yes
USP	0.947	0.00	Yes

Source: Prepared with the support of statistical software SPSS

4.2 Discriminant Validity

In this part of statistical analysis, the Cramer's V coefficient or the reliability of the internal consistency of the instrument (Cronbach's alpha) can be used.

.George and Mallery (2003) suggest the following guidelines to evaluate the Cronbach's alpha coefficients: alpha> 0.9 denotes that the coefficient is excellent; alpha> 0.8 is a good coefficient; alpha> 0.7 the coefficient is acceptable; alpha> 0.6 the coefficient is questionable; alpha> 0.5 the coefficient is poor and alpha <0.5 the coefficient is unacceptable. As shown in Table 3, the measuring instrument seems to have a good reliability of the measurement scale, since the Cronbach's alpha analyzed constructs ranks among 0.8 and 0.9, which are well qualified by the mentioned values of previous authors.

Table 3: Reliability index – Cronbach's alpha

Factor	Cronbach's alpha
CCC	0..940
CBS	0.901
CCS	0.960
RQC	0.841
IS	0.861
SPP	0.910
ITS	0.901
TTS	0.859
USP	0.892

Source: Prepared by authors with the support of statistical software SPSS

The results of the confirmatory analysis added to the exploratory analysis, show the existence of a sustainable factor model for the analysis of the proposed model. The presence of convergent validity and discriminant validity within the instrument, associated with acceptable reliability, confirms that the instrument assesses fundamental variables that influences the assessment level of user satisfaction with the services by telecommunications companies (telephone, television and internet) in the city of Medellin.

Afterwards for hypothesis testing, it was proceeded to make the estimate proposed structural model to evaluate the

factors that determine the satisfaction level of users of telecommunications services, it can be measured by Cramer's V or Somers' D (Fierro, 2010; Valencia, Benjumea & Rodriguez-Lora, 2014). Here, the various hypotheses are collected, and their degree of association by the statistical Somers' D is measured, which corresponds to a measure of association between two ordinal variables that takes a value between -1 and 1, where values close to absolute value of 1, indicate a strong relationship between the two variables and values close to zero indicate little or no relationship between the two variables (Abascal & Grande, 2005).

Table 4 shows the obtained values for the analyzed statistical association and the proposed model. According to the results, it is observed that the association coefficients calculated for the hypothetical model relationships display most significant values, indicating that an adequate correlation between the evaluated factors in the analysis. Table 6 evidences all the relationships between the variables of the proposed model.

Table 4: Degree of association of the included factors in the Symmetric D Somers' model

Factor	CCC	CBS	CCS	RQC	IS	SPP	ITS	TTS	USP
CCC	…								
CBS	0.290	…							
CCS	0.284	0.350	…						
RQC	0.360	0.384	0.443	…					
IS	0.209	0.343	0.366	0.272	…				
SPP	0.293	0.525	0.434	0.636	0.376	…			
ITS	0.266	0.396	0.419	0.563	0.351	0.453	…		
TTS	0.190	0.378	0.352	0.258	0.357	0.354	0.443	…	
USP	0.564	0.379	0.399	0.431	0.283	0.440	0.427	0.335	…

Source: Prepared by authors with the support of statistical software SPSS

As follows, the obtained model after performing the factorial analysis with the respective values of association between the variables.
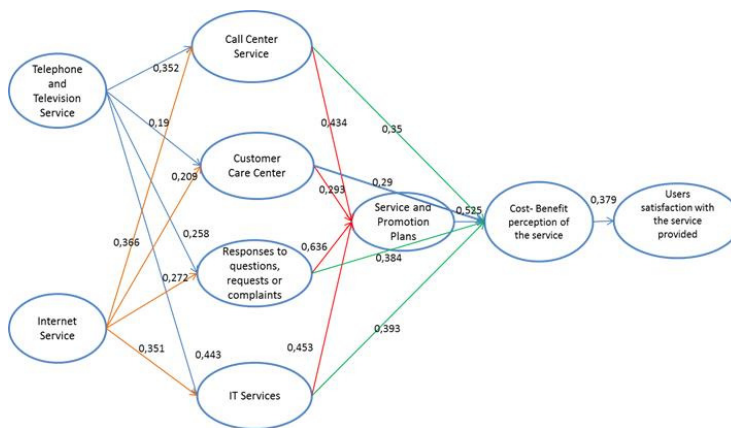
Figure 2: model for measuring satisfaction in users of telecommunications services.
Source: Prepared by authors with the support of statistical software SPSS

5. Discussion of Results

In the marketing discipline, satisfaction is defined as customer perception about the extent which their needs, goals and desires have been covered completely (Rondán, Villarejo, Franco & Jesús, 2007). For this reason in the proposed model, relationships are established between the different offered services, in order to understand the behavior and influence of the satisfaction of one on another. Additionally, various services provided by telecommunications companies are

contrasted with the construct service and promotion plans, cost-benefit perception of the service and the last with the Users satisfaction with the service provided. The results of these hypothetical relationships show that telephone and television services have a significant correlation with call center services (0.352), revealing that the contact center for a company of this industry can generate a good customer experience and is the key tool to change or improve the perception that the public has of the company, because from here it can meet different customer's needs and ensure that increases his level of satisfaction with the received service. In a similar way, for the internet service, the strong relationships are concentrated in the technical service (0.351) and the call center service (0.366), confirming the importance of contact centers with the user, because these are becoming a key strategic asset for business survival and indicates the route to quality care and differentiation.

On the other hand, the services of a call center like responses to requests, inquiries or complaints and technical service reflect a high level of partnership with the construct Service and promotion plans, which may indicate that assisted services not only allow customers to interact with the provider and receive personalized attention, but also they allow to link the company with its users, so they can benefit from its growth and positioning through the establishment of communication channels. These channels allow the dissemination of information on future products and services, better pricing policies and any other information that gives exclusivity to current customers and provide confidence and assurance to new customers.

Another significant relationship presented in the model is the contrast with the constructs Service and promotion plans with the cost-benefit perception of the service, demonstrating that adequate support and assisting of the customer helps to define the perception of users against the benefit that they obtained from companies, and it may constitute a benchmark to determine how likely or not a user will accept or refuse a service offer by a company from the telecommunications service sector.

Finally, the relationship between cost-benefit perceptions of service with Users satisfaction with the service provided is also significant, and reveals that under fulfillment of expectations and resolution needs, customers tend to be more satisfied and therefore feel more motivated to acquire new service and product packages that these companies offer.

6. Conclusions

The measuring of customer service satisfaction is a process that must be recurrent in any organization, in order to monitor the processes and activities that are implemented to improve their performance. The proposed measuring model allows us to evaluate all involved stages in the provision of telecommunications services (landline telephone, television and Internet), in order to find actions to improve their performance. It is important to note that traditional measuring models on some occasions focus only on certain parts of the service, i.e. aspects that deals with the most direct contact with customers (both personal and virtual), leaving aside the joint that must exist between the processes that must be performed in order to deliver a product and service with satisfaction.

The process of measuring customer satisfaction with the provision of services have been proposed with less than 10 questions in order to not be cumbersome for customers. However, such measurements cannot adequately identify the main factors that have impact on satisfaction with the service provided. This particular case is given in measurements of satisfaction in call center services, where traditionally the attention of the staff is measured and not the service. From this need, it is proposed the model in this research, as a created instrument that seeks to provide needed information to improve the provision of telecommunications services from different times and intermediaries involved in this process, in order to makeassertive decisions for the improvement of it. Moreover, these models may not only have application in the telecommunications services industry, but can also be implemented in other related industries, as the scheme aims to measure the commercial exchange satisfaction between companies and customers, taking into account the executed processes to achieve an adequate service, as it allows to focus improvement efforts on processes with the lowest measurement results.

Customer service includes several aspects that being synchronized, they can generate a differentiating component in any market. Among those identified in this study, human resources is highlighted, which must have the needed service skills for an excellent performance. This should be articulated with the different processes that have been adopted by the company, as these need to be oriented to customers. Also, there are highlighted tangible aspects, such as product, corporate image and facilities, that involves together to fulfill the real market needs. Due to the structure of the model, the mentioned aspects by the information needs of the company can be measured independently, but it is suggested that this measurement is completed in order to understand the influence and the articulation between the different services.

Overall, measure the satisfaction with customer service, it is a process that every organization should perform, at

least once a year, as this becomes a support and an input that allows companies to improve and be in the forefront of the different needs of customers. That is why, with the help of the model, partial measurements can be performed at different periods of time to verify the impact of new institutional policies or particular situations that affecs any of the involved factors.

The performed reliability analysis in model determines a high level of reliability in the measured variables, allowing to determine the consistency and thoroughness of the questions that support it. In the future, this allows to be replicated in other demographic and business contexts, following the same process of the blocks line measurement, and being an input for a better making/decision compared with improving the quality of services provided.

References

Abascal, E., & Grande, E. (2005). Análisis de encuestas. ESIC Editorial.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74-94.

Bansal, H. S., & Taylor, S. F. (2015). Beyond service quality and customer satisfaction: investigating additional antecedents of service provider switching intentions. In *Proceedings of the 1999 Academy of Marketing Science (AMS) Annual Conference* (pp. 75-82). Springer International Publishing.

Bitner, M., Faranda, W. T., Hubbert, A. R., & Zeithaml, V. A. (1997). Customer contributions and roles in service delivery. *International journal of service industry management*, *8*(3), 193-205.

Blanco, A., & Rivero, V. (2009). Calidad de servicio percibida por los clientes residenciales en las oficinas de atención al cliente (oac) de una empresa telefónica. *Revista Ingeniería Industrial Actualidad y Nuevas Tendencias 1*(3), 31-42.

Bolton, R. N., & Drew, J. H. (1991). A multistage model of customers' assessments of service quality and value. *Journal of consumer research*, 375-384.

Bosworth, B., & Maertens, A. (2010). Economic Growth and Employment Generation: The Role of the Service Sector. *The Service Revolution in South Asia*.

Calvo, C., Martínez, V. A., & Juanatey, O. (2013). Análisis de dos modelos de ecuaciones estructurales alternativos para medir la intención de compra. *Revista Investigación operacional, 34*(3), 230-243.

Caruana, A. (2002). Service loyalty: the effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing, 36,* 811-822

Castañeda-García, J. A. (2005). El comportamiento del usuario en Internet. Análisis de los antecedentes y consecuencias de la fidelidad. Doctoral thesis. Dpto. de Comercialización e Investigación de Mercados. Universidad de Granada.

Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *The journal of marketing*, 55-68.

Cronin, J. J., Brady, M. K., & Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of retailing, 76*(2), 193-218.

De Rojas, C., & Camarero, C. (2008). Visitors' experience, mood and satisfaction in a heritage context: Evidence from an interpretation center. *Tourism management*, *29*(3), 525-537.

Deng, Z., Lu, Y., Wei, K. K., & Zhang, J. (2010). Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China. *International journal of information management, 30*(4), 289-300.

Fierro, J. (2010). Análisis estadístico univariado, bivariado y variables control [Notas de clase]. Retrieved 12 November 2016, from http://chitita.uta.cl/cursos/2012-1/0000104/recursos/r-25.pdf http://chitita.uta.cl/cursos/2012-1/0000104/recursos/r-25.pdf

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: nature, purpose, and findings. *The Journal of Marketing*, 7-18.

Frías-Navarro, D., & Pascual Soler, M. (2012). Prácticas del análisis factorial exploratorio (AFE) en la investigación sobre conducta del consumidor y marketing. *Suma Psicológica, 19*(1), 47-58.

George, D., & Mallery, M. (2003). Using SPSS for Windows step by step: a simple guide and reference. Boston, MA: Allyn y Bacon.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2001). Análisis Multivariante (5ta ed.). Madrid: Prentice Hall Iberia.

Hellén, K., & Gummerus, J. (2013). Re-investigating the nature of tangibility/intangibility and its influence on consumer experiences. *Journal of Service Management*, *24*(2), 130-150.

Holbrook, M. B. (1999). *Consumer value: a framework for analysis and research*. Psychology Press.

Hoyos, J. & Valencia, A. (2012). El papel de las TIC en el entorno organizacional de las pymes. *TRILOGÍA. Ciencia, Tecnología y Sociedad,* (7), 105-122. http://itmojs.itm.edu.co/index.php/trilogia/article/download/378/373

IBM Corporation (2015). SPSS for Windows, Version 23.0. Chicago, SPSS Inc.

Jones, M. A., & Suh, J. (2000). Transaction-specific satisfaction and overall satisfaction: an empirical analysis. *Journal of services Marketing*, *14*(2), 147-159.

Kandampully, J., & Hu, H. H. (2007). Do hoteliers need to manage image to retain loyal customers?. *International Journal of Contemporary Hospitality Management*, *19*(6), 435-443.

Kim, Y. E., & Lee, J. W. (2010). Relationship between corporate image and customer loyalty in mobile communications service markets. *African Journal of Business Management*, *4* (18), 4035

Kuo, Y. F., Wu, C. M., & Deng, W. J. (2009). The relationships among service quality, perceived value, customer satisfaction, and post-

purchase intention in mobile value-added services. *Computers in human behavior*, *25*(4), 887-896.

Lehtinen, U., & Lehtinen, J. R. (1982). *Service quality: a study of quality dimensions*. Service Management Institute.

Lévy, J. P., Martín, M. T., & Román, M. V. (2006). Optimización según estructuras de covarianzas. Modelización con estructuras de covarianzas en ciencias sociales, 21-22.

Lu, Y., Zhang, L., & Wang, B. (2009). A multidimensional and hierarchical model of mobile service quality. *Electronic Commerce Research and Applications*, *8*(5), 228-240.

MCV. (2015). Informe de Calidad de vida en el Aburrá Sur 2012-2015 evidenció las diferencias en las capacidades de sus municipios. Recuperado de http://www.medellincomovamos.org/informe-de-calidad-de-vida-en-el-aburra-sur-2012-2015-evidencio-las-diferencias-en-las-capacidades-de-sus-municipios/

Monroe, K. B. (1995). Política de precios: para hacer más rentables las decisiones. McGraw-Hill Interamericana de España.

Moscoso, S. C., Gil, J. A. P., & Rodríguez, R. M. (2000). Validez de constructo: el uso del análisis factorial exploratorio-confirmatorio para obtener evidencias de validez. *Psicothema*, *12*(2), 442-446.

Oliver, R. L. (1999). Value as excellence in the consumption experience. *Consumer value: a framework for analysis and research. New York: Routledge*, 43-61.

Oliver, R. L. (2014). *Satisfaction: A behavioral perspective on the consumer*. Routledge.

Parasuraman, A. (1998). Customer service in business-to-business markets: an agenda for research. *Journal of Business & Industrial Marketing, 13*(4/5), 309-321.

Ortiz, G., Toraya, R. y Femat, O. (2015). El impacto de las estrategias de marketing de la Mipyme en la zona de la Purísima en el municipio de Aguascalientes. *Revista CEA*, 1(2), 49-61. Disponible en: http://itmojs.itm.edu.co/index.php/revista-cea/article/view/801/758

Ortiz-Delgadillo, G., Esquivel-Aguilar, E. O., & Hernández-Castorena, O. (2016). El impacto de la relación con el cliente y de la capacidad de valor agregado en el servicio en el rendimiento de la Pyme manufacturera de Aguascalientes. *Revista CEA*, 2(4), 47-58. http://itmojs.itm.edu.co/index.php/revista-cea/article/viewFile/954/857

Pérez, E., & Medrano, L. A. (2010). Análisis factorial exploratorio: bases conceptuales y metodológicas. *Revista Argentina de Ciencias del Comportamiento, 2*(1), 58-66.

Rego, L. L., Morgan, N. A., & Fornell, C. (2013). Reexamining the market share-customer satisfaction relationship. *Journal of Marketing*, *77*(5), 1-20.

Rondán Cataluña, F. J., Villarejo Ramos, Á. F., Franco, S., & Jesús, M. (2007). La segmentación mediante clases latentes en el sector de la telefonía móvil: relación entre calidad de servicio, satisfacción y confianza con la intención de recompra. *Estudios sobre Consumo*, 81, 79-88.

Saura, I. G., Pérez, M. S., Contrí, G. B., & González-Gallarda, M. (2006). Encuentro de servicio, valor percibido y satisfacción del cliente en la relación entre empresas. *Cuadernos de Estudios Empresariales*, (15), 47-72.

Tabaku, E., & Çerri, S. (2015). An Empirical Investigation of Customer Loyalty in Telecommunication Industry in Albania. *Mediterranean Journal of Social Sciences*, *6*(1 S1), 224.

Turel, O., & Serenko, A. (2006). Satisfaction with mobile services in Canada: An empirical investigation. *Telecommunications policy*, *30*(5), 314-331.

Valencia, A., Benjumea, M & Rodríguez-Lora, V. (2014). Intención de uso del e-learning en el programa de administración tecnológica desde la perspectiva del modelo de aceptación tecnológica. *Revista Electrónica Educare*, 18(2), 247-264. doi: http://dx.doi.org/10.15359/ree.18-2.13

Valencia, A., Salazar, O., & Ovalle, D. (2013). Improving the Entrepreneur's Market Research Strategies Learning Process Using the MaREMAS Environment. In International Conference on Practical Applications of Agents and Multi-Agent Systems (pp. 363-374). Springer Berlin Heidelberg.

Woodruff, R. B., & Gardial, S. (1996). *Know your customer: New approaches to understanding customer value and satisfaction*. Wiley.

Xiao-Ping, L., & Mei-Lu, L. (2014). Service quality of online shops and express impact on customer satisfaction? Under E-commerce environment. In *Service Systems and Service Management (ICSSSM), 2014 11th International Conference on* (pp. 1-6). IEEE.

Yu, Y. T., & Dean, A. (2001). The contribution of emotional satisfaction to consumer loyalty. *International journal of service industry management, 12*(3), 234-250.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *The Journal of marketing*, 2-22.

Zeithaml, V. A., Bitner, M. J., de Lara Choy, M. I. P., Hirschfeld, A. L., & Becerril, S. P. (2002). *Marketing de Servicios: Un enfoque de integración del cliente a la empresa*. México: McGraw-Hill.

Zhao, L., Lu, Y., Zhang, L., & Chau, P. Y. (2012). Assessing the effects of service quality and justice on customer satisfaction and the continuance intention of mobile value-added services: An empirical test of a multidimensional model. *Decision Support Systems, 52*(3), 645-656.