QUALITY IN THE SERVICE SUPPORTED BY KNOWLEDGE MANAGEMENT

VICTOR HUGO MEDINA GARCÍA, VALENTIN PIRAQUIVE PEREZ & JOSÉ IGNACIO RODRIGUEZ
MOLANO

Universidad Distrital Francisco José de Caldas, Facultad de Ingeniería, Cra 7 No 40B-53, Bogotá, Colombia

ABSTRACT

This article presents an adaptation of the SECI model of knowledge creation of Nonaka & Takeuchi (1995) for companies in the service sector. The adaptation of this model seeks to solve the existing gaps in these companies regarding the quality of the service provided. The gaps that are sought to be solved by adapting the model are those described in the model for measuring the quality of service of the American school of Parasuraman, Zeithaml and Berry called "Servqual" (2004). In this way, the problem of service quality is addressed from an organizational perspective and knowledge management. The corresponding validation of the model is carried out through the implementation of the SECI model adapted in a services company as an example to validate its applicability to all types of companies in the services sector.

KEYWORDS: *Quality of service, knowledge management, gaps, SECI model, Servqual*

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1. INTRODUCTION

The quality of the service can be expressed as the satisfaction of the needs of a client, fulfilling the expectations that the client has according to what the organization is capable of providing. It can also be understood as the aptitude of the company related to the final service, that is to say to the delivery of a tangible or intangible good to a customer.

It is necessary to differentiate the quality of the tangible / intangible good with the quality of the service, since this involves adjusting the needs, expectations and wishes of the client, who is the main actor in this quality process since, according to the expectations that generate the attention of the service he will decide if the service is of quality based on the expectations generated and how these expectations were completed.

The quality of service then resides in accomplish the expectations generated by the client about how well a service satisfies their needs. To comply with the service quality requirements, it is necessary to take into account a series of components and strategies that will help us so that the client (who is the main actor in this quality process) can comply their service expectations.

Knowledge management, for its part, refers to the process of capture, distribution and good use of knowledge in the organizational environment, which not only generates economic value for the company, but is also the differentiating asset, which in the information age gives you intellectual capital value of the company.

In this article, a knowledge management model will be implemented, specifying the quality of service in an organization. An architecture of the knowledge management model will also be developed and it will be validated through its application in a specific company where it is observed how to apply a model. From knowledge management to service quality will greatly benefit companies or organizations whose goal is to provide good service to customers.

2. FUNDAMENTATION

It is essential to understand the concepts of quality in the service to understand how it can be supported in the management of knowledge to solve the problems of an adequate provision of the service.

2.1 Quality of Service

The quality of service is defined as the result of an evaluation process where the consumer compares his expectations against his perceptions. That is to say, the measurement of quality is carried out by means of the difference in the service that the client expects, and that which he receives from the company (Matsumoto, 2014).

The fundamental characteristics of the services are: intangibility, the non-differentiation between production and delivery, and the inseparability of production and consumption (Ganga, Alarcon & Pedraja, 2019):

- **Intangibility:** Most of the services are intangible. They are not objects, rather they are results. This means that many services cannot be verified by the consumer before their purchase to ensure their quality, nor can the uniform quality specifications of the goods be given. Therefore, due to its intangible nature, a service company often has difficulties in understanding how its clients perceive the quality of the services it provides.
- **Heterogeneity:** The services –especially those with a high work content– are heterogeneous in the sense that the results of their provision can be highly variable from producer to producer, from client to client, from day to day. Therefore, it is difficult to ensure uniform quality, because what the company believes it can provide may be very different from what the client perceives that it receives from it.
- **Inseparability:** In many services, production and consumption are inseparable. In human capital-intensive services, an interaction often takes place between the customer and the service company's contact person. This considerably affects the quality and its evaluation.

2.2 Measurement of Service Quality

Taking into account that the quality of service is defined as an evaluation that the client executes comparing his expectations against his perceptions with the acquired service, it is notable the need that is created to execute a measurement of said service quality. In this regard, a series of measurement models have been developed, among which those of the Nordic school and the American school stand out.

The model of the American school of, Zeithaml and Parasuraman (2004) has been called SERVQUAL. It is without a doubt the most used approach by academics so far, given the proliferation of articles in the area that use its scale. It started from the disconfirmation paradigm, like Grönroos (1978), to develop an instrument that allowed the measurement of perceived quality of service. After some research and evaluations, based on the concept of perceived quality of service, they developed an instrument that would quantify the quality of service and called it SERVQUAL. This instrument allowed them to approach the measurement by separately evaluating the expectations and perceptions of a client, in the comments made by consumers in the investigation. These comments pointed to ten dimensions established by the authors (Figure 1) and with a relative importance that, they affirm, depends on the type of service and / or client. After several statistical correlation studies, they determined that there are 5 determinants of service quality:

- *Trust or empathy:* show interest and level of individualized attention offered by companies to their clients (groups accessibility criteria, communication and user understanding).

- *Reliability*: Ability to execute the promised service reliably and carefully.
- *Responsibility*: Safety, knowledge and attention of employees and their ability to inspire credibility and trust (groups the dimensions of professionalism, courtesy, credibility and security).
- *Response capacity*: Willingness to assist customers and provide prompt service.
- *Tangibility*: Appearance of physical facilities, equipment, staff and communication materials.

Figure 1: SERVQUAL model dimensions. Source: Zeithaml and Parasuraman (2004).

However, they also start from the approach of finding a series of gaps, mismatches or gaps in the process. These influence customer perceptions and are the object of analysis when you want to improve the perceived quality. Thus, the general perceptions of the quality of service are influenced by these gaps that occur in the organizations that provide services (Ramezani, 2015).

The SERVQUAL model, with the study of the five gaps, analyzes the main reasons for the difference that led to a failure in the quality policies of the organizations. The result is the model in Figure 2, which presents four gaps identified by the authors as the origin of the service quality problems. These gaps to which the model refers can be summarized in the following generalizations (Zeithaml and Parasuraman, 2004).

- Gap 1: Difference between user expectations and managers' perceptions.
- Gap 2: Difference between managers' perceptions and quality specifications or standards.
- Gap 3: Difference between service quality specifications and service provision.
- Gap 4: Difference between service provision and external communication.
- Gap 5: Difference between consumer expectations about service quality and perceptions of the service.

There had been talk of four gaps and here appears five. The model proposes that this last gap occurs as a consequence of the previous deviations and that it constitutes the measure of the quality of the service (Zeithaml and Parasuraman, 2004):

Gap nº 5 = f (Gap nº 1, Gap nº 2, Gap nº 3, Gap nº 4) = Measurement of service quality

It can be inferred then that gap 5 is the general consequence of the particular evaluations and its sensitivity lies in the variations of gaps 1 to 4. Once the voids of non-quality service provision were located and defined, caution that their causes must be investigated and corrective actions established to improve quality (Duque, 2005).

Figure 2: SERVQUAL model, Source: Zeithaml and Parasuraman (2004).

2.3 Knowledge Management

It refers to the process of capture, distribution and good use of knowledge in the organizational environment, which not only generates economic value for the company, but is also the differentiating asset, which in the information age gives it the intellectual capital value of company. Take advantage of knowledge has become a powerful tool for exploiting the potential of organizations as it provides a broad view of their organizational culture and how it works. The consolidation of this type of culture within a company shows that there is explicit knowledge about its strategic planning and operation. Similarly, information and knowledge management generates novel components, that is, innovation, which provides added value to each of the functions, operations, resources, products and other elements of the organization. The more intelligent a company is and the more knowledge it accumulates, the greater the possibility of achieving an advantage over market competitors. Companies that make the most of their knowledge do not have to repeat tasks or waste time doing them; they are prepared to show their profitability, to share and not to monopolize knowledge in the organization, they are on the way from particular know-how to shared learning. They evolve in their own space; they have the ability to conduct themselves with the required effectiveness and they develop both inside and outside the organization.

The objectives of knowledge management are:

- Increase business opportunities.
- Increase communication.
- Increase present and future competitiveness.

- Increase leadership of companies in their market.
- Increase performance.

Its main purpose is to translate knowledge into action and this into results (Nieves, 2001).

2.4 Relationship between Quality of Service and Knowledge Management

Knowledge management, when implemented through a model of control, use and operational management, contributes to the improvement of production standards and therefore is established as a fundamental pillar in the execution of a quality management system (QMS), the foregoing due The primary objective of the QMS is the fulfillment of the requirements for customer or end-user satisfaction, improvement in quality and satisfaction that could not be met without a management system promoting the improvement in organizational or personal knowledge being active. since this precisely allows the development of any process which ultimately ends in the achievement of the business objectives as a whole.

At this point, the relationship between knowledge management and service quality is observed when referring to the gaps that appear at the time of quality measurement specifically of the services - these specifically in this article are those proposed in the SERVQUAL model, since by means of the correct design of a knowledge management model it is possible to address these shortcomings by providing the service quality measurement process with added value thanks to the correct use of the information and knowledge present in organizations through all its collaborators, knowledge nodes and facilitators.

2.5 SECI model of Nonaka and Takeuchi

The SECI model is the process of generating knowledge that is based on the interaction of tacit and explicit knowledge within an organizational and temporal framework, according to the Nonaka and Takeuchi model in (Linares, 2014), establishes tacit knowledge as the basis (subjective) but addresses explicit (objective) knowledge. Tacit knowledge is knowledge that is personal and subjective in nature, based on experience, which is difficult to formalize and communicate. It includes cognitive elements - schemas, paradigms, beliefs and visions - as well as technical elements - abilities, skills and aptitudes. Explicit knowledge is knowledge that is objective and rational, is codified and systematized, making possible its transmission. This model takes the generation, accumulation, and integration of organizations' knowledge as a process of circular, cumulative, and continuous interaction cause-effect, which leads to the representation of the aforementioned model by means of a spiral form called the "spiral of knowledge". A dynamic and objective interaction of cyclical operations around the spiral of knowledge causes things that make sense to evolve, expand, acquire complexity and richness of context, giving the organization a reliable source of new knowledge. Recognizing that competitive advantages are temporary, it is understood that the generation of knowledge is a task that cannot stop, thus, based on what Nonaka and Takeuchi (Valhondo, 2010) have stated, the knowledge spiral must evolve without stopping.

3. APPLIED METHODOLOGY

This research is framed in the type of analytical research and with a documentary type design. In the first instance, the relationship between service quality and knowledge management were analyzed. It is important to highlight that knowledge management is essential for any organization in which knowledge is a key resource and in any successful service company there is a need to guarantee the quality of the services provided to its clients through correct knowledge management. This situation forces these companies to design organizational learning and knowledge management programs.

In accordance with the above, an adaptation of the SECI Knowledge Creation model (Nonaka & Takeuchi, 1995)

was chosen, taking into account for such adaptation the required stages which are:

- Knowledge of service organizations.
- The establishment of knowledge nodes or resources in this type of companies.
- The determination of the different actors that participate in the generation of knowledge of each node.
- Identify the knowledge processes in this type of organizations.
- Achieve the establishment of knowledge indicators in each of the stages of knowledge creation in the SECI model applied to service companies.

The aforementioned is applied to service companies in order to reduce the gaps for measuring the quality of service that are stated in the SERVQUAL model with the help of knowledge management tools, such as in this case the adaptation of the SECI model of Nonaka & Takeuchi (1995).

4. MODEL AND ARCHITECTURE

4.1 Knowledge Management Model

According to the proposed methodology, the first aspect to address for the adaptation of the SECI model in companies in the service sector is knowledge of this type of company. In the frame of reference of this article it is exposed that the main characteristics of this type of companies are the intangibility, the heterogeneity and the inseparability of the services that are provided. This makes the quality of the services provided more complex to achieve than in tangible goods companies. However, and following the proposed methodology, the knowledge nodes or resources of these types of companies are established, which are people, technology, processes and organizational culture. Different actors participate in these knowledge nodes, which can be clients, contractors, suppliers, internal personnel and external personnel. In the identification of the knowledge processes in this type of organization, it is evident that during the provision of a service there are the knowledge processes of planning, development, implementation and closure.

In Figure 3, the adaptation of the model for knowledge management of the areas in charge of providing services in companies of this type is proposed, based on the SECI model.

Figure 3: Adaptation of the SECI model applied to Knowledge Management in service companies. Own source

Socialization will allow the service stakeholders to be linked (both internal and external clients), for the development of its planning and implementation through the use of support technologies such as Intranet, yellow pages, corporate portal, virtual communities, and videoconferences, among others. In this way it is possible to provide an alternative solution to GAP 1 for quality of service according to the SERVQUAL model: *Difference between user expectations and managers' perceptions* and GAP 2: *Difference between managers' perceptions and quality specifications or standards*, which are caused by the lack of guidance in marketing research, application erroneous market research instruments, or the absence of instruments such as the one proposed for knowledge management. As a consequence, the service companies do not know in advance which aspects are indicative of high quality for the client, which are essential for them and what levels of provision are required to offer a quality service.

The exteriorization will provide the guidelines and training required for the proper development of the service. Control is exercised and the service previously defined in the planning is executed through the use of support technologies such as simulation software and virtual reality, multimedia systems, knowledge portals, email, among others. In this way it is possible to provide an alternative solution to GAP 3: *Difference between service quality specifications and service provision*, which is caused by ambiguity in the definition of roles and conflicts in the company, inadequate supervision and control systems, lack of teamwork, among others. It is the consequence of not having the adequate resources (technology,

personnel and systems) to comply with the client's specifications and which are clearly addressed in an integral way in the phase of externalization of the proposed model.

The combination brings together the data and information collected in socialization and externalization. The information will be processed and documented through deliverables, fulfilling the activities determined in the service planning, generating the change management and the different adjustments that lead to improvements and optimization of the service to finally deliver to the client what was promised from a principle without limiting their expectations and, on the contrary, exceeding them. This can be achieved through the use of support technologies such as Data Warehouse, Internet, search engines, intranet, virtual forums, email, document management, among others. In this way it is possible to provide an alternative solution to GAP 4 *Difference between service provision and external communication*. Which is because the promises made to customers through marketing are not consistent with the service. For example, if an advertising campaign is focused on the quality of the service and facilities of a hotel (which contributes to the formation of expectations by the client), it is not admissible for the client to find the bathroom without proper cleaning.

The internalization allows decision-making based on the finished service, generating its closure and a series of lessons learned in each service provision. This with the help of support technologies such as virtual forums, simulation, virtual reality, artificial intelligence, communities of practice, among others. It should be noted that the phases of the SECI model are a spiral process, which retain a continuous improvement approach; With this, by achieving the reduction of GAPS 1,2,3 and 4 after each iteration, it is also possible to reduce GAP 5: Difference between consumer expectations about service quality and perceptions of the service, the which according to the SERVQUAL model is equal to the measure of the quality of the service that the client perceives.

4.2 Indicators

To guarantee that the model meets the expectations of the organization, a series of indicators must be taken into account, which can be observed in the models below. We will show the indicators that must be taken into account to guarantee the optimal operation of the management model of the knowledge:

- Socialization Indicators:
- Customer satisfaction degree = $(\text{value perceived by the customer} - \text{customer expectations}) * 100$
- Number of claims in the service = $(\text{number of services} - \text{number of claims} / \text{number of services}) * 100$
- Percentage of customer satisfaction = (According to customer satisfaction surveys)
- Externalization Indicators:
- Efficacy in the service = $(\text{Results achieved} - \text{planned results}) * 100$
- Service efficiency = $(\text{Planned resources} - \text{resources used}) * 100$
- Effectiveness = efficiency * effectiveness.
- Internalization Indicators:
- Service fulfillment = $(\text{demand to accomplish} - \text{demand accomplished} / \text{demand to accomplish}) * 100$
- Punctuality in deliveries = $(\text{delivery time} - \text{delay in service} / \text{delivery time}) * 100$

- Quality in the process.
- Incident care = (number of incidents-total incidents attended / number of incidents) *100
- Combination Indicators:
- Relationship with the company's clients.
- Compliance with planned activities.
- Relationship with customers.

4.3 Architecture in Quality of Service

In a company, knowledge management is very important, which is why you must have the ability to analyze, identify and detect which sources of information can be of great importance for information and knowledge management. This is why models and architectures must be developed that serve as the basis for the management of business knowledge. Accordingly, structural architecture such as OVUM (Lawton, 2001) must identify the bases of knowledge until the transmission of knowledge in the organization (Figure 4).

Figure 4: Adaptation of the Ovum architecture applied to the Quality of service. Own source.

This OVUM architecture is applied to quality of service, in the first part it can observe the fact of the first data collection that can be given through social networks, ISO Standards (Fontalvo, 2010), historical data, among others. Once the data is obtained, the next step is the infrastructure, in which the main items to cement the quality of the service are mentioned. In information management, it can be seen that as the quality of the service is somewhat intangible, obtaining this information must be done with great caution.

The corporate taxonomy consists of some very important elements that will help us with the quality management in the service where we mention customer service, act against the needs and ensure customer satisfaction, something that is very important in an organization if you want assure quality in this process.

Continuing with the OVUM architecture, a step higher we find the knowledge management services which help us to the correct handling of information and knowledge inside and outside the organization, which guarantees us that the management of information and knowledge is giving appropriately. According to the type of organization, the interface for managing the quality of the service may vary, which is why it is necessary to have a very well defined type of organization and the interface indicated lastly, we have the level of application of this architecture where They stand out to all the organizations that have some type of interaction with clients and provide them with some good or service.

5. CONCLUSIONS

- Knowledge management becomes important to the extent that it supports the articulation of organizational pillars in any company. It is about having a structure that allows communication to be stimulated at each node of said complex, taking into account their interrelationships between them and with the environment to influence and facilitate technological assimilation, which in this case will improve the quality of the service provided by any organization that plays a role of marketer provider among others related to final consumer services.
- The proposed model for knowledge management gives us a series of mechanisms to improve the acquisition of information and the generation of new knowledge in the detailed area, something very important since the quality of the service helps us to maintain both customer loyalty in the organization, as well as gaining new potential customers due to the good management of the techniques learned.
- Something that should be highlighted is the good management that must be given to knowledge in an organization not only in quality area, on the contrary it should be given in any area of the company, since knowledge is a very necessary tool in organizations and in the changing environment in which we are, a competitive advantage may come before the competitors, something that is very representative today.
- The application of such a knowledge management model must provide an extensive vision of what happens both internally and externally of the organization, since in such a changing environment it is not only possible to look at and apply changes internally, that is why they must be clearly identify the patterns to follow, the behaviors of the environment and all the variables that affect the company.
- Service organizations must undertake technological changes that allow them to be more competitive thanks to Knowledge Management. Although they involve a risk, these changes must be internalized as necessary, essential and as opportunities. And also, it is necessary to be aware that this process does not end there, with the implementation of one of these systems. This actually becomes a starting point for organizations in the economy of the future: the digital economy.

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