Innovación de servicios en la atención a alumnos de los niveles medio superior y superior

Innovation of Services in the Attention to Students of the Upper Secondary and Higher Levels

Inovação de serviços na atenção aos alunos do ensino médio e superior

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Resumen

Esta investigación tuvo como objetivo determinar, desde la perspectiva de la reingeniería de procesos, los factores que posibilitan y obstaculizan la innovación de servicios en el área de atención a alumnos de una institución educativa privada del estado de Hidalgo, México, durante el periodo de enero de 2010 a diciembre de 2011. Las técnicas de investigación usadas fueron la documental, la observación participante, la realización de entrevistas a las ejecutivas de servicio de primera línea y un estudio de *benchmarking* interno, todo ello con el fin de formular propuestas de innovación de los servicios de atención a estudiantes. Los resultados permitieron identificar el servicio con mayor área de oportunidad y se trabajó en él para generar propuestas de innovación y capacitación del personal que pudieran mejorar la percepción del servicio entre los usuarios. La investigación sentó las bases para que la institución iniciara la migración de varios servicios a entornos virtuales, incluyendo la capacitación del personal para el uso de nuevas herramientas tecnológicas, a través de un plan adecuadamente estructurado.

Palabras clave: gestión de la innovación, innovación de servicios, mejora continua, reingeniería de procesos.

Abstract

This research aimed to determine, from the perspective of process reengineering, the factors that enable and hinder the innovation of services in the area of attention to students of a private educational institution in the state of Hidalgo, Mexico, during the period of January from 2010 to December 2011. The research techniques used were documentary, participant observation, conducting interviews with front-line service executives and an internal benchmarking study, all with the aim of formulating innovation proposals for student care services. The results made it possible to identify the service with the greatest area of opportunity and work was done on it to generate proposals for innovation and staff training that could improve the perception of the service among users. The research laid the foundations for the institution to initiate the migration of various services to virtual environments, including the training of staff for the use of new technological tools, through a properly structured plan.

Keywords: innovation management, service innovation, continuous improvement, process reengineering.

Resumo

Esta pesquisa teve como objetivo determinar, sob a ótica da reengenharia de processos, os fatores que possibilitam e dificultam a inovação dos serviços na área de atenção a estudantes de uma instituição de ensino privada no estado de Hidalgo, México, durante o período de janeiro. de 2010 a dezembro de 2011. As técnicas de pesquisa utilizadas foram documental, observação participante, realização de entrevistas com executivos de serviços de linha de frente e estudo de benchmarking interno, todas com o objetivo de formular propostas de inovação para o atendimento ao aluno. Os resultados possibilitaram identificar o serviço com maior área de oportunidade e nele se trabalhou para gerar propostas de inovação e capacitação de pessoal que pudessem melhorar a percepção do serviço entre os usuários. A pesquisa lançou as bases para que a instituição iniciasse a migração de diversos serviços para ambientes virtuais, incluindo a capacitação de pessoal para o uso de novas ferramentas tecnológicas, por meio de um plano devidamente estruturado.

Palavras-chave: gestão da inovação, inovação em serviços, melhoria contínua, reengenharia de processos.

Introduction

Innovation affects quality and business efficiency. Quality is the set of activities to design, improve and optimize processes, products and services, reducing cycle time, variability and costs, with the aim of offering the best to the market (Cruz, López and Ruiz, 2017). Innovation in organizations requires a properly structured plan with a design that encourages change. An approach that acts as a bridge between one and the other, between quality and innovation, is that of process reengineering, which consists of implementing new ways of carrying out projects.

The search for quality and efficiency of services is a common practice in the so-called knowledge society. Currently, companies use increasingly accessible technological means to carry out the efficient management of scarce resources. One of the most useful tools for this search is innovation focused on services, which aims to impact the perception of the end user, achieve levels of quality and satisfaction above the average and thus achieve a status of positioning and differentiation.

Institutions in the tertiary sector are characterized by their intangibility, which is why it is essential to continuously improve both the quality of their services and their reputation in order to compete. Inseparability is another of the characteristics that distinguish services from tangible products. Here, the contact between the client and the provider stands out and is distinguished by the characteristics of each participating agent (Martín and Díaz, 2018). Hence its heterogeneous nature, which results in the customization of the service according to the specific needs of the client.

The contribution of the tertiary sector in the Mexican economy has shown a growing trend. In 2010, it contributed 4,913,184.23 of constant pesos and 5,317,413,689 of pesos in 2019, which represented 62% and 67% of the national Gross Domestic Product (GDP) (National Institute of Statistics and Geography, [Inegi] 2021a). In addition, in those same years, it generated 28 137 630 and 34 670 599 jobs, respectively. (Inegi, 2021b).

According to Tejada, Cruz, Uribe and Rios (2019), innovation management is an improvement strategy that demands skills such as creativity, disposition, cooperation and teamwork of the people who make it up, with the support and backing from senior management to achieve goals based on full customer satisfaction. Knowledge is an essential source of competitive advantage and wealth in organizations. Human capital has positioned itself as the intangible resource that creates value within a company (Villegas, Hernández and Salazar, 2017).

Human capital is considered by the Organization for Economic Cooperation and Development [OECD] as the knowledge, skills, competencies and attributes incorporated in individuals that facilitate the creation of personal, social and economic well-being (OECD, 2020). For Leyva, Espejel and Cavazos (2020), the development of innovation and the use of technology are qualities of human capital.

Creative and innovative employees are indispensable resources that respond adequately to the complex dynamics of the work environment that prevails today (Salamzadeh and Mirzadeh, 2016). Human capital, in addition to having specific talent and skills, must be capable of generating strategies that support the fulfillment of a company's objectives (Witasari and Gustomo, 2020).

Pradhan and Jena (2016) determined three factors of employee performance:

1) Skills performance. It includes the knowledge, experience and habits applied in the context of work responsibility.

2) Adaptive performance. It is the ability to deal with the dynamic environment of the organization.

3) Contextual performance. It is the positive attitude at work expected by the members of the organization.

The strategic plans carried out by the outstanding human capital allow organizations to make assertive decisions and, by extension, the generation of better skills, profiles and values aligned to the mission and vision of the company (Terán, Ramírez and Martínez, 2020)
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Pedraza (2018) highlights the value of human capital: the employees of an organization are repositories of knowledge, experiences, abilities, skills, values and capabilities that, through individual potential, make it possible for companies to meet their objectives.

Flores, Ramos, Ramos and Ramos (2019) pointed out that organizations have to adopt innovative technologies that benefit the end customer and are oriented towards optimizing human, economic and technological resources with a vision of the future.

Within the management of the company, technological innovation constitutes a challenge of a strategic nature from the perspective of interactive learning (Tarapuez, Guzmán and Parra, 2016), and significantly impacts organizational performance due to the implementation of a new idea, translated in a new product, process or service (Azar and Ciabuschi, 2017).

A highly specialized, motivated human capital with sufficient experience is essential in any innovation strategy carried out by the company (Morales, Ortiz, Duque and Plata, 2016). However, Saunila (2017a) concluded that employee performance must occur within a culture of participatory leadership where communication and coherence of vision between senior management and employees must be efficient to have a positive impact on the ability to innovation (Saunila, 2017b).

Human capital is the one that has the greatest influence on innovative activity. Hence the importance of generating strategies to develop this capital and take advantage of it to benefit the interests of the company and to remind employees that their contributions are valuable and serve as a basis for continuous improvement. (Rangel, Vivanco, Barrera y González, 2017).

Now, innovation arises in response to the need to solve a problem and occurs naturally in environments where managers are prepared to take on the challenge of creating the new know-how necessary to achieve competitive advantages in their businesses. (León and Mancheno, 2017).

According to Silva, Jiménez, Santamaría and Villalba (2019), it is essential that companies strengthen their quality standards in order to meet the needs of users. And in addition to avoiding the monotony of work and the focus on only obtaining profits, seek continuous improvement of customer service, aimed at total quality.

In relation to the quality of the service, Cervantes, Stefanell, Peralta and Salgado (2018) went beyond the reductionist paradigms that traditionally position quality only in the services and products available to the client; Today, following these authors, it is essential that they are accompanied by a quality procedure that allows warm attention together with a reduction in response times and a permanent and efficient contact that exceeds customer expectations.

Maintaining innovation throughout the business structure can be achieved by taking into account the contribution of customers, partners and competitors, especially those who are capable of bringing new ideas of value and high impact, ideas often unattainable for isolated research processes of the organization itself (Cuevas and Cortés, 2020). The voluntary contribution of knowledge, experiences and time to open projects favor more effective and dynamic innovation schemes (Schlagwein, Conboy, Feller, Leimeister and Morgan, 2017).

The objective of this research is to determine the factors that enable and hinder the innovation of services in the area of attention to students of an important private educational institution in the upper and upper secondary levels of the state of Hidalgo, Mexico, during the periods January-May 2010, August-December 2010 and January-May 2011 through the review of their historical results of the service quality indicator (Servqual), the area's internal procedures manual, internal policies related to innovation, participant observation of the case, interviews with front-line service executives and an internal benchmarking study to formulate innovation proposals for student services implemented in the period August-December 2011.

This document contains three sections. The first contains an introduction that includes the theoretical framework where the theoretical and empirical literature is reviewed on the importance of human capital in companies for the generation and implementation of

innovations, the value of innovation for organizations and the advantages of working for of continuous improvement and quality in services for institutions belonging to the tertiary sector. The second describes the methodology in which the structure of the application of the research instruments is summarized. The results are presented in section three; In this, the 38 services offered by the area of attention to students are analyzed considering the historical results of its "Service quality survey", where 110 students participated (80 of upper secondary level and 30 of higher level), four campuses for the benchmarking study and three front-line service executives, who were interviewed. Finally, the conclusions derived from this work, the discussion with other theoretical and empirical studies, the future lines of research, and the bibliography that provides theoretical support to this research is presented.

Materials and methods

The present study was carried out, at first, through a qualitative-descriptive approach that aimed to identify the processes and services of the area of attention to students of one of the private educational institutions in the upper middle and upper levels of higher education. prestige in Hidalgo, Mexico, by reviewing the area's operating manual, in order to ensure continuous improvement of these services and make them more accessible to end users in accordance with their vision and values. For this, interviews were applied to three executives of direct service to students.

Subsequently, the internal benchmarking technique was applied to take as a reference the work of other campuses of the same institution in the states of Puebla, Querétaro, Mexico City and the State of Mexico in terms of reengineering of services, in order to compare operations and make significant improvements.

The instruments applied in this research are detailed below:

- Participant observation. At the time of the study, it was easy to be present in situ, as part of the management team of the area, so there was a wide familiarization with the manuals and processes, as well as with the principles, values, vision and differentiators of the institution, which allowed to act with strict adherence to these, as well as to contrast the theoretical with the organizational practice.

- Documentary analysis. The institution makes great efforts to guarantee the quality of its services in general, which is why every semester it applies a service quality survey based on the Servqual model to its upper and upper secondary level students, as well

as to its teaching staff and administrative, aimed at obtaining feedback on said services and taking actions in favor of continuous improvement. Although its methodology and structure will not be analyzed in this document, the historical results of these surveys are available, as well as the area's procedure manual to reinforce the observed results and have a guide for the innovation strategies to be carried out.

- Semi-structured interview. It was structured in order to contrast the information obtained during the observation and document review processes. The interviews were guided by the open script, which was validated according to the judgment of leaders and experts in the area to ensure relevant proposals and in accordance with pressing needs. This tool was able to identify the strategies implemented in the area to generate continuous innovation both in its processes and organizational structure and in the services offered to the end user. Likewise, it was possible to determine those processes with relevant areas of opportunity and with the greatest obstacles that they present in daily practice.

- Internal benchmarking. Directors of the related area of the Puebla, Querétaro, Mexico City and State of Mexico campuses of the same institution were interviewed to learn about the reengineering practices applied to the processes identified as areas of opportunity to carry out a comparative analysis on best practices. under the innovation proposal carried out on the Hidalgo campus.

The structure of the application of the research instruments is detailed in Figure 1.

Figure 1. Structure of the application of research instruments
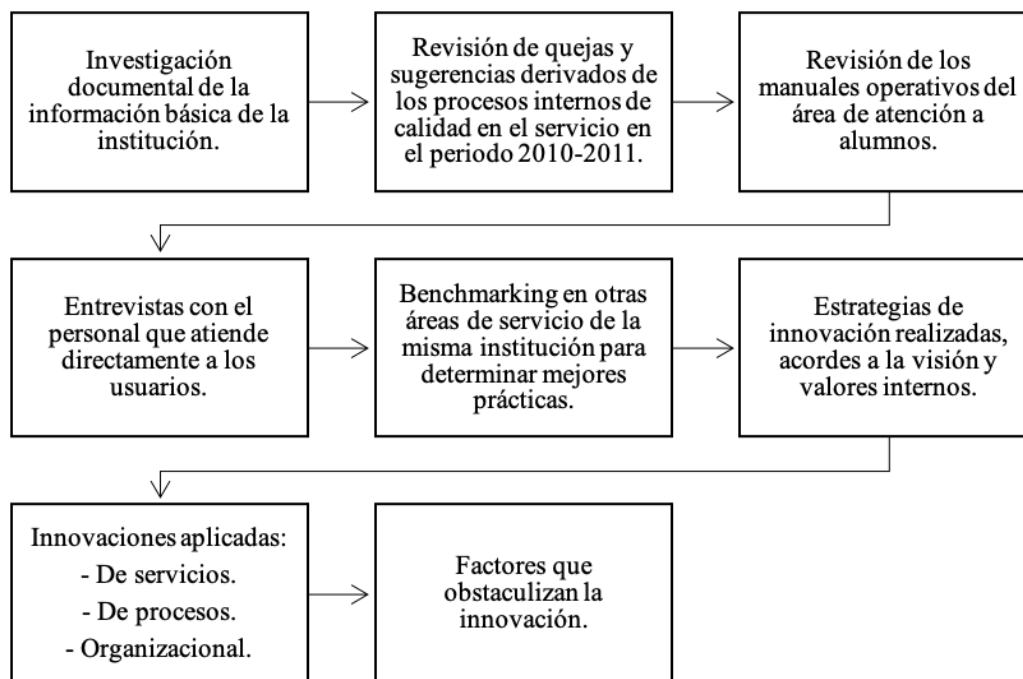
Source: self made

The documentary analysis of the vision and values of the institution indicates that both constitute transcendental elements that identify and bring a community closer together. Augusto (2019) defines culture as the set of powerful, latent and unconscious forces that determine both our individual and collective behavior, our ways of perceiving, our thought patterns and our values. Culture is learned from the environment, and this is what the educational institution in question has endeavored to specify, in such a way that all members of this organization are united through institutional values.

Innovation requires a culture to flourish indoors. Aşçı (2018) considers five institutional values:

1) Innovation.
2) Integrity.
3) Teamwork.
4) Human sense.
5) Global vision.

Innovation is also a core part of the vision of the institution in question: "Leadership, innovation and entrepreneurship for human flourishing." This openness to innovation, visible in its mission and values, has allowed it to create a competitive advantage over other educational institutions. This flexibility to change has allowed front-line service personnel in

their student service area to generate continuous improvement projects that directly impact customer service.

Results

In 2010, a review of the complaints and suggestions about the 38 services offered by the student care area derived from the report of the "Service quality survey" made it possible to identify the service for issuing study certificates as the one with the highest number number of incidents is mainly due to the lack of an alternative communication channel to face-to-face care (Figure 2).

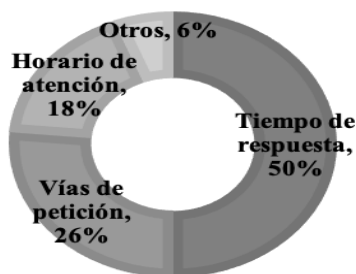**Figure 2.** Incidents in the services of the student care area
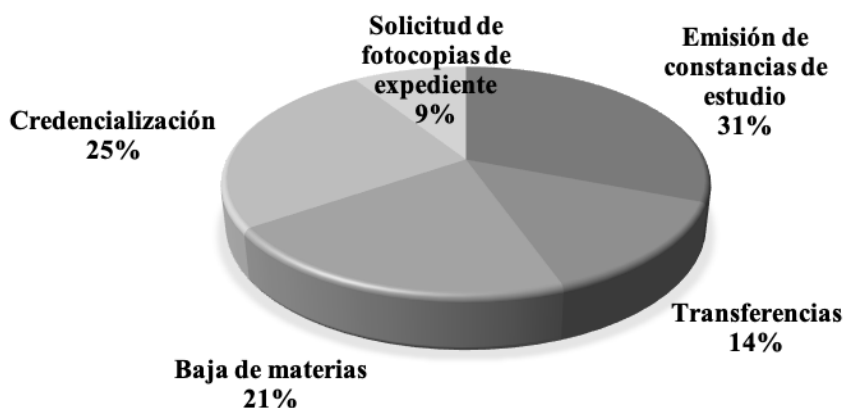
Source: Own elaboration based on the report of the "Service quality survey" for the student services area for the periods 201011 (January-May 2010) and 201013 (August-December 2010)

In figure 2 it can be seen that 31% of the 110 students surveyed, 80 of upper secondary level and 30 of higher level, presented a complaint related to the service of issuance of study certificates. In addition, 25% of them are dissatisfied with the credentialing process, 21% with the withdrawal of subjects, 14% with campus transfers and 9% with the request for photocopies of the file.

Regarding the service of issuing certificates, of the 34 complaints identified, 50% were related to the response time, 26% to the channels available to request the service, 18% were related to the hours of operation and 6% to another type of factors (figure 3).

Figure 3. Type of complaint issued by the certificate issuance service

Source: Own elaboration based on the report of the "Service quality survey" for the student services area for the periods 201011 (January-May 2010) and 201013 (August-December 2010)

From a qualitative-descriptive approach, it was sought to identify both the factors that hindered the development of innovation projects in the area and to reaffirm the findings of the quantitative analysis regarding the most problematic services, this time from the point of view of the care executives From first line.

First, a direct interview was conducted with the three service executives. The results were collated and reinforced both in a participant observation phase, through on-site presence throughout the research, and through internal benchmarking applied in four of the campuses of the same institution. Subsequently, the information collected was analyzed based on the objectives specified above and with the goal of offering a solution to the problem posed.

This is how the triangulation technique between methods was used, which, according to Samaja (2018), is about the combination of different methods for the study of a particular phenomenon. This allowed corroborating the results of the quantitative analysis, the interviews, the participant observation and the internal benchmarking to validate the data and provide reliability to the study.

The results of the interviews with the three front-line service executives in the area are presented in Table 1.

Table 1. Results of the direct interviews with the three service executives

Variable	Respuestas ejecutiva 1	Respuestas ejecutiva 2	Respuestas ejecutiva 3
Concepto de *innovación*	Es el camino para hacer las cosas de una manera diferente.	Nos ayuda a hacer mejor las cosas y a crear otras nuevas.	Es una nueva forma de hacer las cosas y replantearnos su efectividad.
Impacto de la innovación en su área	Nos brinda mayor conocimiento de cómo están las cosas y cómo las podemos mejorar constantemente.	Favorece la creatividad y ayuda a que podamos hacer mejor nuestro trabajo, mejorando los servicios y la atención al usuario.	Nos ayuda a explorar nuevos servicios y mejorar los que ya tenemos, así como la atención que brindamos a los alumnos y papás.
Conocimientos para realizar innovaciones	No tenemos una capacitación formal sobre el tema, pero me gustaría saber más para mejorar mi servicio.	Nunca he tomado algún curso específico de innovación, ni en la escuela ni aquí, pero considero que es valioso saber más sobre el tema.	Solo sé que se trata de hacer cosas nuevas o cambiar los procesos para hacerlas mejor, pero no he tenido ninguna capacitación al respecto.
Proyectos de innovación realizados	Llevo trabajando aquí dos años, y cada semestre nuestra directora nos solicita un proyecto encaminado a mejorar algún aspecto de nuestro servicio, por lo que llevo tres proyectos realizados y uno en curso, pero no estoy segura de que	Yo he realizado tres proyectos de innovación, pero la verdad han sido asignados por mi directora porque a mí me cuesta mucho trabajo identificar soluciones para los problemas en el área que veo diariamente,	Cada semestre nos piden un proyecto de mejora de los servicios que ofrecemos. A veces nuestra líder nos ayuda a aterrizarlos con posibles soluciones a los problemas que detectamos. Yo tengo

	sean completamente innovadores.	además de que me da mucho miedo proponer algo que no sea importante o que se burlen porque no sé sobre qué aspectos trabajar.	tres años y medio en el área y en la cuenta van siete proyectos, aunque sinceramente solo he terminado cinco.
Clasificación de la institución respecto a la innovación: seguidora o líder	Yo creo que es líder, porque trabajé en otra institución educativa donde no usan nada de tecnología y aquí sí, siempre buscan la calidad en lo que se hace cotidianamente.	Siempre he pensado que esta institución es líder en lo que hace porque va muy adelantada en comparación con otras escuelas, lo que la hace diferente, desde mi punto de vista.	Definitivamente creo que es líder en innovación. Desde antes de trabajar aquí es la percepción que tenía. Además, se preocupan siempre por mejorar las cosas.
Servicios con áreas de oportunidad	A mí me han tocado muchos papás, sobre todo, que se quejan del servicio de expedición de constancias. Creo que ese es el más problemático actualmente, aunque también hay otros como el de baja de materias.	Conmigo se quejan muchos alumnos por la expedición de constancias y por las transferencias de campus, pero en mayor grado es por las constancias.	Definitivamente por el servicio de constancias, aunque a veces también se molestan por el de baja de materias o el de credencialización, incluso por el de graduación cuando les toca ser candidatos a graduarse.
Tipos de quejas relacionadas con el servicio	Las quejas son porque a veces les urge una constancia y cuando les decimos que tienen que	Los alumnos se enojan porque a veces, cuando es viernes y necesitan una constancia el lunes temprano, pero el área	He detectado mucha molestia, sobre todo en los papás de los alumnos porque no hay otra forma para

más problemático	esperar uno o dos días hábiles, se molestan.	ya cerró por su horario de servicio, y aunque mandan correos y marcan a los teléfonos, se sienten desatendidos y la respuesta la tienen hasta el lunes, siempre negativa.	solicitar las constancias que no sea por teléfono o acudiendo presencialmente al área, porque a veces estamos muy ocupadas aquí y no podemos responder llamadas o viceversa.

Source: self made

The interviews with the three front-line service executives made clear the current commitment to the vision and values of the institution, and reflected the involvement of all employees in institutional innovation. For example, each semester they are asked for a strategic project to improve services or processes in the area; thus, participation occurs in an environment of trust and constructive criticism. It was concluded that the study certificate issuance service was one of the most requested in the area, and also the one that generated the highest number of complaints due to waiting times and the limitation of hours of attention.

In order to validate the operation of the same area but on different campuses, a benchmarking was carried out to monitor the strategies that have been implemented to improve this particular service. Results are shown in table 2.

Table 2. *Benchmarking* at the Puebla, Querétaro, Mexico City and State of Mexico campuses

Campus	Número de servicios ofrecidos	Participación del personal en proyectos de mejora	Servicio con mayor número de quejas 1	Servicio con mayor número de quejas 2	Servicio con mayor número de quejas 3	Soluciones (servicio de constancias)
Puebla	30	Sí	Bajas de materia	Transferencias	Constancias	Petición de constancias por OneDrive
Querétaro	34	Con supervisión	Transferencias	Credencialización	Constancias	Atención inmediata de peticiones urgentes
Estado de México	42	Con supervisión	Constancias	Bajas temporales	Bajas de materia	Reducción de los tiempos de atención a través de una mayor comunicación entre las áreas involucradas
Ciudad de México	39	Sí	Constancias	Credencialización	Bajas temporales	Atención de peticiones por redes sociales

Source: Own elaboration based on the results of the benchmarking applied in the period

January-May 2011

The institution has a positive trend towards continuous improvement through innovation projects that are generated from the first line of the service, adequate and oriented to solve real problems. At the campus level, the institution has made several organizational changes to ensure a better flow of communication of top management strategies; In this way, you have formed a direct connection with all staff. In relation to the area of attention to students, a continuous effort was detected to listen to the needs of the users to transform the processes and make them more opportune; There has been an approach with the service executives to find out the most relevant areas of opportunity in terms of the perception of the services. It should be remembered that the innovation of services and processes go hand in hand to achieve significant changes in the quality of the service.

The obstacles to innovation identified through the interviews and participant observation were:

- Low qualification of personnel, therefore the work of the leadership of the area is relevant to identify innovation projects with high impact on the service / process.
- Fear of error due to a possible loss of status within the work team.
- Lack of formal monitoring of innovation projects due to the immersion in the daily operation of the area.

In accordance with the findings of the study, we proceeded to resume the service of issuance of study certificates for students of upper secondary and higher level, which has not presented a radical innovation since the beginning of operations in the area: it represents a monotonous process due to the lack of effective communication channels alternative to face-to-face, which forces the user to go to the offices and wait for their turn to be attended only to request a record that, in addition, has very high and unsatisfactory response times. According to Cardona, Balza and Henríquez (2017), service innovation has three phases: improved efficiency, improved quality, where innovation is incremental, and new services, where innovation is radical but is supported by the other two phases.

A new idea is considered innovative when it is effectively applied in routine operation and is commercially successful. In the present study it can be translated as the degree of satisfaction of the end users reflected in the quality indicator in the service of the area. Due to this, a new virtual attention model was generated for the reception of requests and internal communication, where users can enter from their student portal to request certificates, through an available digital catalog, through any device with internet access. It is a service

available 24 hours a day, seven days a week, which eliminates the restriction of face-to-face hours in the area.

Likewise, the use of the OneDrive tool as an internal communication channel with other areas involved in the service of issuing certificates was included. Thus, the requests that are received can be consulted in real time, both on site and from the new online service.

For the implementation of the new work methodology, the strategy of figure 4 was proposed.

Figure 4. Implementation of the new online service for requesting records

Source: self made

Awareness of the need for change

The work team and direct leaders were presented with the diagnosis of the current situation and the problem detected, as well as its implications of recidivism in its quality indicators. With this, it was possible to prepare the panorama for the change, sensitizing the direct actors about the need to generate a reengineering in the process that would lead to an innovation in the final service.

Preparing for change

The work plan was detailed revealing the new work methodology for the service, including the operator training plan.

Incorporation of the new service into the work routine

The importance of the correct handling of the technological tools that shaped the new service by the service executives was emphasized. For this purpose it was required:

1) The active participation of the work team, both the front-line team and the technical support team.
2) Presentations and pilot tests of the technological tool.
3) A correct implementation plan (table 3).

Table 3. Service innovation implementation plan

Fase	Julio	Agosto	Septiembre	Octubre	Noviembre	Diciembre
1) Sensibilización a la necesidad de cambio	X					
1.1) Presentación del diagnóstico de la situación actual	X					
2) Preparación para el cambio	X	X				
2.1) Presentación de la nueva metodología	X					
2.2) Capacitación		X				
3) Incorporación del nuevo servicio en la rutina laboral			X	X	X	X
3.1) Participación del equipo de trabajo			X	X	X	X
3.2) Pruebas de la herramienta			X			
4) Evaluación del proceso y mejora continua					X	X

						X
4.1) Evaluación de indicadores						X
4.2) Cambios definitivos en el manual operativo						X

Nota: se trata del año 2011.

Fuente: Elaboración propia

Process evaluation and continuous improvement

In addition to the vision and values of the institution, and to close the first experience of the process, an evaluation of the effectiveness of the new service was carried out considering:

- The experience of the operators.
- The experience of the users.
- The indicators of the quality survey of the area.

Discussion

Identifying the factors that enable or hinder the innovation of services in an institution of the tertiary sector determines the quality of the services offered, in this case, being an educational organization, to the student community, and allows anticipating the needs in favor of of continuous improvement and total satisfaction, since it provides an approach to a correct operation capable of reducing negative effects.

According to the review made by Gómez, Sención, and Vargas (2016), restrictions on innovation are classified into four categories: 1) financial, 2) knowledge, 3) market, and 4) legal. The results of this study point to the first and second as having the highest incidence, given the nature of the area and its target market, the educational community. This identification of obstacles allowed the generation of a staff training plan that could reduce the negative effects of the lack of knowledge as a restriction for innovation in the area.

The productive structure of developing countries is made up to a greater extent of companies with low and medium level technology that, despite not having innovation departments, can adapt new technologies and generate adaptive and incremental innovations (Morales , Ortiz and Arias, 2012). In the case of the present study, a new work methodology was implemented that included the adaptation of technological tools to emerging needs for

an improvement in the quality of service in the area and that allowed to shape a service totally different from the traditional one. In this way, an innovation was achieved in the study certificate issuance service, a precedent for the generation of new services.

The results of the empirical study carried out by Cárdenas, Farías and Méndez (2017) support the fact that the development of innovation projects depends directly on organizational culture and management. Furthermore, Cárdenas et al. (2017) conclude that there is a significant relationship between technological and innovation practices and the organization's practices (culture and management). Something analogous emerged in this research, since these axes were highlighted at the time of the innovation project implementation, especially thanks to the support of the institution itself, which provided the requested technological tools, an act that gave rise to to innovation.

In addition to the above, the contributions of Montelongo and Alemán (2017) are added, who identified the use of Information and Communication Technologies (ICT) as key in everything related to educational processes to meet the service expectations of the new generations. In this case, technology was positioned as an essential tool in the development of new services and for future innovations.

Finally, Akomo, Ajowi and Dvc (2015) highlight the limitations that can occur with the use of ICT, such as the lack of training in staff, an inadequate infrastructure and the lack of security in the handling of personal data, situations that were identified in the interviews with the service executives and that were reinforced by the conclusions of the applied participant observation.

It is important to note that the results presented in this study were based on a non-probabilistic sample, as well as on the technological tools available in the indicated period of time, so that the data collected and the conclusions derived are difficult to generalize to others. sector institutions and other temporary periods, due to the constant change that occurs in technology today. Therefore, new works that consider the present are recommended to expand the knowledge generated in the educational context and include the analysis of new services arising from the implementation of innovation in the processes of the care area and their interaction with new technologies that guarantee the continuous improvement of these.

Conclusions

The research laid the foundations for the institution, as a whole, to initiate a migration of several of its services from all areas of contact with students and parents to easily accessible virtual environments, available all the time, as well as training of your employees for the use of technological tools available to facilitate internal communication such as OneDrive, Skype for Business, Cisco Webex, Trello and Evernote, and a better use of institutional tools such as the student portal and the parent portal for dissemination and virtual services in general.

Within the institution there is an innovation of an informal and non-methodological nature, since it comes from the demands of the users codified in the service quality index. Derived from the analysis of the operating manual of the student service area of the study institution, the need to apply a reengineering of processes to at least five other services was identified: withdrawal of subjects, credentialing, graduation, issuance of vehicle access keys and transfers. This is due to the fact that they present the same problems as the service attended, which can cause user dissatisfaction and new complaints. The area must continue working to take advantage of both the flexibility of the institution towards innovation and the technological resources available to establish an alternative communication channel with students and direct the operation to the virtualization of most of its services that are currently provided in person.

Despite the fact that the study was carried out 10 years ago, it served as a basis for the institution's student service area to systematize its services and offer them virtually, which began as an innovation of a service that negatively impacted their surveys. of user satisfaction to later become a well-defined and documented process in the procedures manual and declared before the institution's quality management system, for which it became susceptible to being evaluated in audits. Additionally, some tools in which staff were trained for their use and exploitation in future projects continue to be used today, such as OneDrive, which became the communication channel par excellence with other areas and as an internal control instrument that is also assessable. in audits; Others have been replaced by new technologies, using the change strategies suggested by the study, such as the use of WhatsApp Business for non-personal communication with users, the exploitation of its institutional portals as additional contact channels and virtualization, at least until August 2019, 75% of the student services offered by the area. Therefore, the relevance of the research lies in the disruption

generated by the incorporation of innovations that will help to continue correcting bad practices and redesign obsolete services in favor of continuous improvement and obtaining positive results in their service satisfaction evaluations.

Future lines of research

Given the growing importance of the tertiary sector in the Mexican economy, the search for continuous improvement and innovation of services are elements of great relevance for companies, regardless of their line of business, since it is necessary to constantly learn the new technologies that are they offer in the market to make business more efficient. A future line of research in the study of continuous improvement and innovation in educational services is to include with greater precision the vision of the end user, for example, through rapid surveys that are applied immediately after receiving care and not having to wait a semester to learn about the areas of opportunity for the services offered by the institution.

The results of this future line of research can be compared with those obtained in the present study, which will allow a comparative analysis in two periods of time, an important element in understanding the evolution of educational services in Mexico.

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