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ANALYSIS OF INNOVATION IN PROCESSES AND PRODUCTIVITY REGARDING THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN BAKERY COMPANIES IN THE MUNICIPALITY OF CAMPECHE, MEXICO

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Summary. The objective of this research is to analyze the use of ICT that favor the innovation of processes and the factors that affect the productivity of bakery companies in the Municipality of Campeche, Mexico, it is a non-experimental type of research, it corresponds to a cross-sectional design with descriptive scope and a quantitative approach, whose population is 135 companies with a sample of fifty-seven (57); a convenience sampling was carried out (20 companies), since the units to be studied were chosen according to their easy availability, this motivated by the existing implications generated by the COVID-19 pandemic; an instrument was elaborated and validated in its content by management experts and its reliability was calculated, it was applied to the owners or managers of the mentioned companies. Among the conclusions, the following stand out: the incorporation and use of ICTs is necessary due to the need to modify and adapt to new technologies and changes in the market, which are so necessary for subsistence. The reasons that prevent innovation are based on: not having enough information about the elements that make them up, high costs to innovate, lack of financing from the state and the private sector, not having enough capital. Finally, there is evidence of a marked influence of internal and external factors that affect productivity, which is why it is important that they be studied and analyzed in depth in the future.

Key words: ICT, Productivity, Innovation, Internal Factors, External Factors

ANÁLISIS DE LA INNOVACIÓN EN LOS PROCESOS Y LA PRODUCTIVIDAD RESPECTO AL USO DE LAS TECNOLOGÍAS DE LA INFORMACIÓN Y COMUNICACIÓN (TIC) EN LAS EMPRESAS PANIFICADORAS DEL MUNICIPIO DE CAMPECHE, MÉXICO

Resumen. El objetivo de esta investigación es analizar el uso de las TIC que favorecen la innovación de los procesos y los factores que inciden en la productividad de las empresas panificadoras del Municipio de Campeche, México, es una investigación de tipo no experimental, se corresponde con un diseño transversal con

alcance descriptivo y un enfoque cuantitativo, cuya población es de 135 empresas con una muestra de cincuenta y siete (57); se realizó un muestreo por conveniencia (20 empresas), toda vez que las unidades a estudiar se eligen de acuerdo a su fácil disponibilidad, esto motivado a las implicaciones existentes generadas por la pandemia del COVID-19; se elaboró un instrumento que fue validado en su contenido por expertos en gerencia y calculada su fiabilidad, fue aplicado a los dueños o gerentes de las citadas empresas. Entre las conclusiones se destacan: es necesaria la incorporación y uso de las TIC debido a que se requiere la modificación y adaptación a las nuevas tecnologías y cambios presentes en el mercado tan necesarios para la subsistencia. Los motivos que impiden la innovación están sustentados en: no tener información suficiente sobre los elementos que las conforman, costos elevados para innovar, falta de financiamiento por parte del estado y sector privado, no disponer de capital suficiente. Finalmente se evidencia una marcada influencia de los factores internos y externos que inciden en la productividad, por lo que es importante que en el futuro se estudien y analicen a profundidad.

Palabras clave: TIC, Productividad, Innovación, Factores internos, Factores externos

Introduction

The present work is based on the analysis of innovation in processes and productivity through the use of Information and Communication Technologies (ICT) in bakery companies in the Municipality of Campeche, Mexico, whose objective is to analyze the use of ICT that favor innovation in processes and the factors that affect productivity in bakery companies in the Municipality of Campeche, and thus provide information regarding the companies in question, since to date there is no research available in this productive sector, which represents an important segment within the market of the municipality of Campeche.

Currently, it is observed that companies that tend to modernity face great challenges, due to the demands of customers, suppliers, users and consumers, among others, however, to meet these challenges, one of the ways to achieve it is through the added value generated by innovation, creativity, continuous growth, and competitiveness (Cordero-Guzmán and Rodríguez-López, 2017), within which ICTs are incorporated, which have currently set the tone for the management of companies in terms of the possibility of offering their products and services (Flores and Flores, 2021).

In relation to the benefits of ICT to improve productivity and quality in its products and services, its implementation within the organization, must be done in a planned manner, considering that its incorporation is not synonymous or a guarantee of achieving all the benefits they offer; every time that to achieve them it is relevant to have a knowledge of the processes of the company, plan the ICT needs and incorporate technological systems gradually (Cano-Pita, 2018).

Likewise, the author in question states that, "90% of the time, failure is not due to software or systems, but to the fact that people do not have enough knowledge about their own company or its business processes" (2018, p. 504), coupled with this, it is vitally important to make a thorough analysis of both service and production processes, in order to generate innovation activities and consequently an increase in productivity. These activities include research and experimental development, engineering and design, marketing and image, intellectual property, employee training, software and database development, asset acquisition or leasing, and innovation management (Organisation for Economic Co-operation and Development [OECD], 2018).

Currently the use of information and communication technologies is a tool that is no longer optional, but must be adopted and incorporated in companies, it is also key to increase purchases, sales, services, among others, and also allows them to improve their production

activities by innovating their processes using ICT, and as a result they will have an increase in productivity, since innovation and technological changes are considered pillars of economic development.

Innovation. Conceptual basis

There is a great deal of literature on the subject of innovation, but all this information refers to changes in products and processes in organizations in order to be in constant growth and adaptation to what the market requires and more particularly the final consumer.

Based on the above, several writers and researchers have expressed definitions of innovation, but it is pertinent to highlight that all of them start from a need which in turn generates a question and that, by answering it, an opportunity for knowledge is created. In this regard, reference is made to the Oslo Manual definition "An innovation is a new or improved product or process (or a combination of both) that differs significantly from previous products or processes of the institutional unit and that has been made available to potential users (product) or implemented in the institutional unit (process)" (OECD, 2018, p.32). Likewise, innovation is understood as "industrial technological development, where science and technology have played a fundamental role in the growth and economic development of countries" (Espinosa and Romero, 2016, p.2).

Similarly, special mention is made of innovation as a process through which society extracts social and economic benefits from knowledge, since it has become a mandatory subject in any organization and even more so in developing countries where the adoption of this concept is fundamental (Ramírez, Martínez, Castellanos and Colmenares, 2012), benefits that are important in every company, because transforming products or processes with the intention of economic growth depends on it and therefore being better positioned at national and international level.

As stated before, innovation is applied to new ideas, products, processes and services, all with the purpose of keeping the final consumer satisfied, which in equivalence maintains the market demand, hence when making innovations the material and economic resources necessary for adaptation and implementation must also be included (Díaz and Guambi 2018).

Process innovation

In the Oslo handbook (OECD, 2018) process innovation is defined as "New or improved business process for one or more business functions that differs significantly from previous business processes and has been implemented in the company" (p. 21), in this sense, processes are a fundamental element in organizations, for the production of goods or services.

In companies it is convenient to analyze all production activities and within these the processes that need to be changed, considering that if they are identified and in turn divided into sub-processes, specialized tasks can be assigned, resulting in an improvement and therefore an added value (Medina et al., 2019), since changes in the sub-processes are easier to make, because at the slightest variation in market demand, they can be made immediately, that is, in very short times.

Based on the above, process innovation becomes more functional when the identified processes have that sense of being able to access a change, always taking into account to make the most of innovation and also consider working methods that allow modifying the tasks in such a way that a totally different process can be obtained, this leads to the effectiveness of any change or modification will be reflected in an increase in productivity and profitability, otherwise, process innovation does not get the expected effect.

Production of goods and services

It is appropriate to point out that the economic activity of companies aims to produce a good or service that is directed to the market to be acquired by the final consumer, consequently, to produce it, essential components such as raw materials, machinery and the most important element, which is labor, are needed. A good is something that can be perceived, it is a material object that can be manipulated, accumulated or in its case, transformed, and a service by its nature is intangible, in a way it has and must be consumed instantly, and this means that it is not possible to be stored.

In this order of ideas, "production is related to the creation of goods and services, comprises the planning, design, operation and control of the systems that produce goods and services and covers a wide range of activities and not only those of manufacturing goods" (D'Alessio, 2004, p. 2). 2), in this definition refers to the process that begins with the planning that represents the objectives and activities necessary to achieve the goals, the design allows the team to establish patterns, the operations are immersed in the transformation of the products and in the control the possible deviations between the planned and the result of producing a good or service are updated.

In the production process, the production area should be considered as a substantial part of the company due to the responsibility it has, as well as two other areas that are of great importance which are marketing and finance, which have activities that support production in the form of bringing goods and services to customers (D'Alessio, 2004). Importance is given to marketing because its purpose is to bring together factors and facts that influence the market, to create what the consumer wants or needs, and finance is responsible for raising funds, and the provision of the capital that is used for the operation of the company.

In relation to the incorporation of ICT in the production of goods and services, companies within the global approach have the need to add them in each of the activities, such as software, digital technologies and tools, artificial intelligence, among others, thereby facilitating and streamlining the performance of tasks, which ultimately contribute to their economic growth.

Productivity

Productivity is a strategic objective present in companies; without it, the products or services derived do not reach the necessary levels of competence to remain in the market. Tejada (2007) defines it as "the relationship between economic production and the resources invested to generate it, which depends on the capacity to innovate products with an increasing added value, while the efficiency in the use of production inputs is optimized to the maximum" (p. 289), i.e., it seeks to improve the efficiency with which resources are used.

According to Chiavenato (2009) "is a measure of performance that includes efficiency and effectiveness. Efficiency is the appropriate use of available resources, i.e., it emphasizes means and processes. Effectiveness is the achievement of goals and objectives" (p.13).

Among the resources that support an adequate relationship between the company and the market are ICTs. Their incorporation is not only an option, but a commitment, considering that day by day, with technological advances, productivity is improved. In this sense, some countries are formulating policies to develop emerging technologies such as robotics and artificial intelligence, to mention a few, all in order for companies, and therefore countries, to optimize their productivity (OECD, 2020).

In this order of ideas, the Economic Commission for Latin America and the Caribbean (ECLAC, 2021), points out that the challenge of obtaining productivity quickly can be

achieved through an exhaustive analysis of how to incorporate new technologies, determine the training of the personnel who operate the equipment, as well as risk planned investments, among others, all of them in function of achieving an increase in productivity.

One aspect that countries need to keep in mind is that productivity represents an increase in the standard of living and quality of life of the population, but the downside, so to speak, is that a decrease in productivity will be reflected in a slowdown in economic growth (International Labor Organization, 2020).

The concept of productivity can be considered from various levels (international, national, industrial, sectoral, business, or sections of a company). In this referential framework, it is conceptualized as "the improvement of productive capacity and the general environment, seeking efficiency, i.e. improving the product, effectiveness, salaries, etc., without improving any other indicator" (Villamizar and Villamizar, 2011, p.160), since, by seeking to improve the good or service, efficiency and effectiveness are guaranteed.

In this context, "total productivity is the result of dividing the outputs by the inputs, that is, the value of all the inputs used for it" (Jiménez and Espinoza, 2007, p. 529), which indicates that, if a company's purpose is to manufacture and sell, the outputs should be reflected in sales.

In Mexico, INEGI (2021) states that total productivity is framed within the accounting of economic growth, it allows to know the productive factors that contribute to production and therefore the performance of the sector, so the development of economic public policies must be in the hands of managers who make the right decisions, especially when technology and the globalization of markets play an important role, as well as the installation and operation of multinational consortiums.

Technological change

Technological change can be considered as a mechanism that promotes economic growth, increases the quality of products, restructures the standards with which the organization works and improves the level of competitiveness in the organization, it can also be seen as an instrument of power and control (Garcia, n.d.). For Turriago (2014), it is "the process and transformations derived from modifications in production techniques, of whatever nature these productive techniques may be" (p.30). The aforementioned definitions refer to changes in technology, in the process, i.e., there will always be the need to modify what is already obsolete for what is current or more recent, in order to adapt to new techniques, in accordance with updated equipment that allows for greater productivity.

With the adaptation to new techniques, knowledge is acquired as a result of the experience and training given to employees, that is to say, technological change goes hand in hand with technological learning, which refers to the "form of business development that has to do with the increase and diversification of information, with the application of technology and the realization of innovations" (Salado, 2002, p. 73), since innovations are the result of technologies and knowledge of workers, which promote changes in products or services, for the economic growth of companies), since innovations are the result of technologies and the knowledge of workers, which promote changes in products or services, in favor of the economic growth of companies.

Technological changes are present at all times, they are totally variable, they are based on the needs of the user or the companies, their adoption in the production phases favors the fulfillment of the processes according to the market demand. Nowadays, almost all work activities are carried out through computers and devices commonly used by any person and

because of this, they are considered the means by which the interaction between the organization or industry with the client or final consumer is generated.

In this sense, it is considered that technological changes improve production, resulting in products and services that meet the requirements of customers and the market, as well as the effects on productivity and the increase of the economy, since they provide products and offer quality services, and therefore their permanence in the market is guaranteed.

New technologies

Today, companies face a market in which it is necessary to meet the demands of these and customers at a fairly fast speed, so it is essential to have technological equipment with which you can respond in the same way, all with the firm conviction to stay in the market. With respect to this equipment, which is used as a means for the flow of information between the company, the market and customers, its renewal should be taken into account as far as possible, in line with consumer demands.

It is clear that these new technologies have not been adopted by all companies, perhaps due to lack of knowledge, lack of resources, resistance to change, and lack of opportunity to manage them efficiently, among others. However, those that have incorporated new technologies are possibly based on an adequate management of innovation in their products or services, interest in being competitive, and investment possibilities, which allow the implemented changes to be successful.

The inclusion of new technologies in companies or organizations must follow certain phases in a planned manner, i.e., first, management must be convinced of the need for change, then the establishment of strategies to achieve it, and finally its implementation. It is not advisable for companies to make changes without having carried out the previous phases.

New technologies "basically comprise the study and application of digital technologies and telecommunication systems; that is, multimedia computers and peripherals such as scanners, printers, digital cameras, and computer networks, whose maximum exponent is the Internet" (Pérez, 2005, parr.5), that is, means capable of transmitting information and communication, which are currently integrated to the main network that is the Internet.

According to Joyanes (2006), a computer "is an electronic device used to process information and obtain results. Data and information can be entered into the computer through the input and then processed to produce an output" (p.4); in other words, means that it is simply placing data for the computer to process to produce a result that can be text, multimedia or images. Multimedia refers to "any object or system that uses multiple means of expression (physical or digital) for the purpose of presenting information. These multiple media are text, images, animation, sound, video, etc." (Domínguez, Paredes and Santa Cruz, 2015, p. 96), i.e., there is the possibility of combining multiple media whether physical or digital that are processed by a computer, so the user can perform his activities more fluently and thus obtain information.

Referring to the peripheral computers are "technological devices with which information (data) is introduced to the computer; to then process them, transform them into electrical signal and store them in memory" (Acosta et al., 2014, p. 17), i.e., includes those devices in which the computer has direct communication with the user and with the system, perform input or output interventions, they are used as essential devices since it depends on them that there is such communication, within these are the keyboard, mouse, scanner, bar code readers, touch screens, digitizer table, stylus, among others.

In relation to computer networks, "a network is formed by a set of devices connected to each other, either physically or through logical connections, in order to allow the exchange of information between them" (Carceller, 2013, p.7), in other words, networks refer to the need to connect two or more computers to the Internet, either by wired or wireless means, in order to establish communication, or for a specific purpose.

Regarding the internet, it can be defined as "a large global computer network formed by a multitude of small networks and individual computers connected to each other so that it is possible to exchange information between them" (Molina and Polo, 2015, p. 28), currently allows interconnection between computers or computers worldwide, with the purpose of distributing information between users.

Internal and external factors that influence productivity of bakery companies

Since a company is conceived and established, it aims to achieve its objectives, economic growth, permanence in the market, profitability, among others, but the basis of all this is to have a close relationship of the productive factors, that is, to have a solid production system (inputs, processes, products and information flow), which are connected to customers, suppliers and the environment (Carro and Gonzales, 2015), in order to obtain a product or service, whose purpose is to satisfy the consumer.

In this sense, companies need to maintain a high level of production based on activities that allow them to improve their production processes, taking into account those external and internal factors that in one way or another influence the quality of their products or services and, therefore, their productivity.

In relation to external factors, management has no control, so it is necessary to generate strategies to anticipate situations; therefore, a permanent analysis of the variations in the company's external environment is recommended. Regarding internal factors, they are controllable and are considered opportunities for productivity improvement, because they occur within the company (Velásquez, Rodríguez and Guaita, 2012).

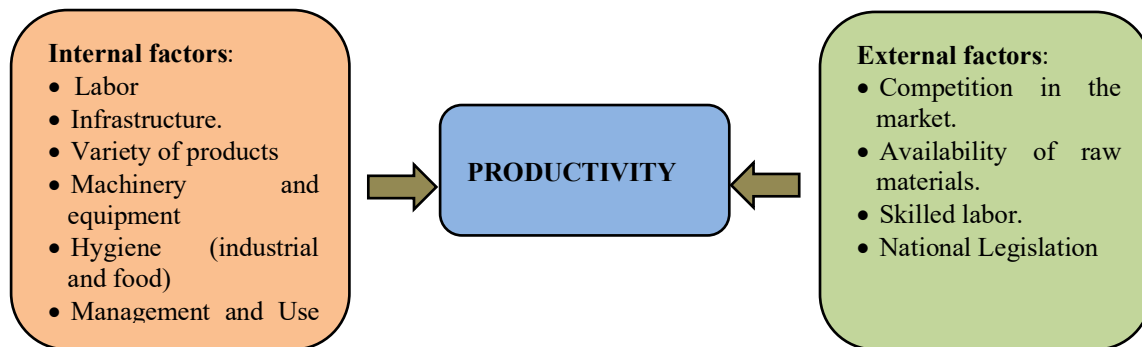
In this order of ideas, it is pertinent to mention the research conducted by Mena (2011, p. 42), in which he states that, in bakery companies, the internal factors that influence productivity correspond to: land and buildings, materials, energy, machinery and equipment, infrastructure, and human resources; as external factors: availability of materials or raw materials, skilled labor, state policies, allocation and tariffs, and adjustment measures.

Taking into account what is expressed by Mena (2011) and motivated by the fact that the present research is located in the same context, it is proposed to use some factors and include others that will be adjusted based on local characteristics, considering that these can influence the productivity of the bakery companies located in the Municipality of Campeche.

Being the object of study, bakery companies, where the internal and external factors that influence productivity play an important role, the authors assume as internal the following: infrastructure, variety of products, machinery and equipment, hygiene (industrial and food), and the management and use of ICT. External factors include: market competition, availability of raw materials, skilled labor, and national legislation (see Figure 1).

Figure 1

Internal and external factors that influence the productivity of bakery companies in the in the municipality of Campeche. Mexico



Considering the internal and external factors that can influence the productivity of the bakery companies in the municipality of Campeche, the following is a description and theoretical support for each one of them.

Internal factors

Labor: It is defined as "It is the human effort involved in the process of transforming raw materials into finished products" (García, 2013, p.75), in this case the labor referred to comes from the specialized labor of external factors, having with this the control of quality in raw materials and products.

Infrastructure: It corresponds to "any system, physical structure (work), network or organization necessary that give functional, optimal and efficient support for the proper functioning of a society and its economy" (Cerón, 2018, p.18), in this sense the facilities of the bakery companies require to be in accordance with the performance of their activities and their production processes, in relation to accessibility to customers and suppliers, buildings that comply with the construction standards established in Article 1 of the Construction Regulations for the municipality of Campeche (1989), which states that:

The provisions of these regulations shall govern in the municipality of Campeche and their purpose is to regulate all construction, installation, modification, extension, repair and demolition works executed on public or private property, as well as urban development, planning, safety, stability and hygiene, limitations and modalities imposed on the use, destination and reservation of land or buildings of public or private property.

Variety of products: The variety of products offered "is given by the flexibility in terms of the speed with which the company can change from producing one product to producing another or in terms of (the inverse of) the costs of these changes" (Roberts, 2006, p. 38), in this case the bakery companies produce a great diversity of products in order to meet the demand of their customers, considering that bread is a product of high consumption in the country.

Machinery and equipment: In bakery, machinery is the set of motorized or mechanical devices that facilitate the work to maintain quality and improve performance. The equipment are stainless steel tables, scales, kneader-batterers, dividers and bread slicers (Buendía and Berrocal, 2016). The machinery and equipment to be used must have favorable accessories to

facilitate the work and process the products with quality, and also be sufficient to meet the daily demand.

Hygiene (industrial and food): Regarding the objective of industrial hygiene is the prevention of occupational diseases caused by physical, chemical or biological contaminants acting on workers" (Baraza, Castejón and Guardino, 2014, p. 23) and for food hygiene "a series of work routines will be carried out for all processes of receiving raw materials, cleaning and disinfection of facilities and utensils, handling and manufacture of the food product and its storage" (Jiménez, 2012, para. 5). Hygiene in these processes allows the consumer to maintain confidence in the product he/she is acquiring, so he/she knows that it is guaranteed, thus representing consumer loyalty.

Management and Use of ICT: In bakery companies, information technology offers multiple advantages, especially because it improves (hygiene in food handling, order and cleanliness, management since information can be accessed from any point, such as sending it, sharing it with customers and suppliers). In addition, there are computer applications specifically adapted to the sector, which collect all the processes that take place in a bakery (premises where work is carried out in a manual activity with the help of tools or simple machinery), from the request for raw materials to the sale (Moreno and Morales, 2021).

External factors

Competition in the market: arises from interactions in the market to the extent that rivalry between companies, in order to obtain customers or money from customers, leads them to offer higher quality and lower prices. This rivalry process forces each company to look inward in order to ensure that all resources are being used efficiently (Joeke and Phil, 2008). Today it is considered necessary to have competition in order to offer quality and value-added products.

Availability of raw materials: It is essential that the company's management relates with suppliers in order to ensure production, that is, to have identified various alternatives for each consumable or raw material and above all prices that give the opportunity to obtain the maximum profit, in this sense "the selection and evaluation of suppliers has become increasingly a key element of business strategy for its high competitive impact" (Sarache, Castrillón and Ortiz, 2009, p.155)

Specialized labor: the person with this category is generally "the person responsible for production and at the same time who has the greatest technological knowledge in the company and consequently is also the one who controls the quality of raw materials and products" (Kohli, Díaz and Castro, 2003, p. 191). As a result, specialized and experienced labor is required for the production of the variety of products, so this type of personnel must be trained in the production of these products.

National Legislation: A regulatory body that operates at the national level and is composed of laws that develop the precepts of the country's Political Constitution, Regulations that regulate the implementation of the laws, and Standards that specify characteristics of products and services, in compliance with regulations and laws. Likewise, the national legislation on: adequate standard of living, health, education, labor, food, healthy environment, water, housing, social security and culture, which are directly related to the activities of the companies, regardless of the sector in which they operate these are directly related to the activities carried out by companies, regardless of the sector in which they operate.

Method

The purpose of all research is to provide information on a topic of interest, for which certain activities are required to obtain results, which would have no value if there is no support, i.e., a scientific method, or in any case a methodology that explains how it is going to be done (Gómez, 2012).

In this sense, this research is based on the positivist paradigm, which is based on assumptions that seek to relate to the interpretation of the world, and also indicates the problems that should be addressed and have a reference to provide answers to any doubt (Ramos, 2015), positivism then, considers that only knowledge that has its origin in real facts and that are verified can be considered knowledge (Guamán, Hernández & Lloay, 2020).

This is a non-experimental type of research, because the object of study is observed in its natural state and then the corresponding analysis is performed. It also corresponds to a cross-sectional design, with descriptive scope, which is the one where data are obtained at a single time (Paz, Salomón, García and Suárez, 2020). Likewise, will have its support in the quantitative approach, that is, the realization of analysis and studies of reality, through the development of certain measurements and values of discrete type and thus have reliable data (Escudero and Cortez, 2018). It is carried out using a field design, in order to obtain information directly on the scene.

Regarding the study population, in this case, about the bakery companies located in the Campeche Municipality of Mexico, the information contained in the National Statistical Directory of Economic Units (DENUE) of the National Institute of Statistics and Geography of Mexico (INEGI, 2020) was investigated. All sizes of establishments are taken as a reference (according to the number of people working), which resulted in 135 companies. It is appropriate to point out that the population is considered broad, therefore, it is necessary to calculate a sample that provides information in a meaningful way to the totality of the subjects to be studied (managers, directors or owners of bakeries).

In relation to the sample, understood as "portion of the population that have the necessary characteristics for the research, clear enough so that there is no confusion" (Ñaupas et al., 2018, p.334), by virtue of this, the formula for calculating samples for finite populations is used, a total of fifty-seven (57) companies were determined.

Once the sample size was obtained, the type of sampling was selected in order to determine which companies were to be surveyed. In this sense, this research uses non-probabilistic sample size and sample selection by convenience "procedure that consists of selecting the sample arbitrarily. The sample units are self-selected or chosen according to their easy availability" (Mejía, 2002, cited by Escribano, 2007, p.37), in this case only 20 (twenty) bakery companies were considered. This was motivated by the existing implications in the country, generated by the COVID-19 pandemic.

The measurement instrument, for Hernández-Sampieri, Fernández and Baptista (2010), is "that which records observable data, which truly represent the concepts or variables that the researcher has in mind" (p. 276), in this research, the questionnaire is used, which is defined by Arias (2012), as "the survey modality that is conducted in written form by means of an instrument or paper format containing a series of questions. It is called a self-administered questionnaire because it must be filled out by the respondent, without the intervention of the interviewer" (p. 74).

Based on the objective of the research, the variables involved are identified and operationalized in order to develop the instrument to collect the information. In this sense, a questionnaire was elaborated, which consisted of fifteen (15) items, distributed in three sections: ICT, Innovation in processes through the use of new technologies and Productivity through technological changes. Content validity was determined for the aforementioned instrument, which "refers to the degree to which an instrument actually measures the variable it intends to measure" (Hernández-Sampieri et al., 2014, p. 200). This validity was carried out by three experts in business management. Likewise, the reliability for each section of the instrument is determined through Cronbach's coefficient, obtaining for ICT (0.707); innovation in processes through the use of new technologies (0.718) and Productivity through technological changes (0.808), values that indicate that the instrument is reliable and therefore its application allows achieving optimal results.

The questionnaire was applied to the study subjects, the information obtained from the respondents was organized and descriptive statistical methods were used, using the statistical programs Statgraphics and SPSS (Statistical Package for Social Sciences) version 25, which were used to process the data and obtain the results, which are analyzed and interpreted below.

Results

As a scope of the questions formulated in the instrument applied to the managers, directors or owners of the bakery companies located in the municipality of Campeche bakery companies located in the Municipality of Campeche. The analysis is then carried out based on the sections: ICT, Innovation in processes through the use of new technologies and Productivity through technological changes.

Section I: ICT.

In relation to the need to incorporate technologies to the processes or services within the bakery companies of the municipality of Campeche, 85% of those interviewed consider that their incorporation is necessary due to the need to modify and adapt to new technologies and changes in the market, which are so necessary for their subsistence 85% of those interviewed consider that their incorporation is necessary because it requires modification and adaptation to new technologies and changes in the market, which are so necessary for their subsistence, in addition to the fact that they do not affect the costs of the company, on the contrary, being more updated with modern equipment and systems, they will be more competitive; the remaining 15% prefer to maintain the traditional style, which allows inferring that if they are not updated with the use of ICTs they run the risk of disappearing.

Regarding the use of business platforms as digital infrastructures that enable the interaction of two or more sectors, 90% of the companies do not use them, reflecting a very personalized operation, a situation that limits the coordination between users (customers, advertisers, service providers, producers, suppliers and even physical objects), which allows optimizing its operation within the market where it operates; the remaining 10% do use them, being considered a small number that are applying new technologies, giving advantages to be competitive and inserted within the globalizing process in which companies are currently immersed.

When analyzing the opinion of those surveyed in relation to the experience in the use of ICT by employees at the time of implementing new technologies, they start from the principle that even though they consider it important, it is not essential; however, they indicate that having basic knowledge helps them to take advantage of this training when they need to be trained for the acquisition of new equipment or tools, they are in a better position to take advantage of this training.

Among the responses referring to the use of social media to offer products or follow up with customers, the most used are Google, then Facebook, followed by Instagram, WhatsApp and, to a lesser extent, Twitter. The Pinterest, YouTube and LinkedIn options were not selected. They also indicated that Google, Facebook and Instagram are the applications most used by customers to search for products or services.

Section II: Innovation in processes through the use of new technologies.

In relation to the importance of making changes in the operations of the production process when new technologies are incorporated in the bakery companies of the municipality of Campeche, 95% consider that it is important to incorporate them, arguing that this will improve internal operations.

With respect to modifications in the product, process or image during the time of operation, it was asked about what type of modifications have been made, highlighting that 40% are made in the image, particularly the adequacy of shelves and camera equipment, 40% have made modifications to the product, adding QR to the packaging, 10% to the process, by means of machinery and equipment that can be programmed in time, and the remaining 10% have not made any modifications, although they stated that they do not rule out implementing any of them if necessary.

When analyzing the opinion of the respondents on the reason for the modifications in the product, process or image, it was found that such changes were made with similar frequency at the request of the client and due to the owner's experience, followed by the suggestion of a specialist, and in a smaller proportion only one company indicated that it was due to research; the respondents who indicated the other option did not indicate what the reason was.

Respondents' answers regarding the reasons that prevent the company from generating innovation are based on: not having enough information about the elements that make them up, high costs to innovate, lack of financing from the public and private sector, not knowing aspects related to technologies, not having enough capital and a small percentage of lack of personal interest on the part of the owner.

Section III: Productivity due to technological changes

Regarding the need for training to increase productivity, 65% strongly agreed, 20% agreed, 10% neither agreed nor disagreed, and the remaining 5% strongly disagreed, which allows us to infer that, in this last percentage, the trend of traditional companies is maintained. In accordance with the above, when asked whether training is provided to employees when incorporating new technologies, 85% of those interviewed said yes, a result that coincides with those who indicated that they strongly agreed and agreed with the options.

When asked whether they considered it necessary to incorporate technology to increase production volume and customer service, 95% said yes, changes that are undoubtedly reflected in productivity, while the remaining 5% said no. Consequently, these results reflect a clear trend towards the need to incorporate new technologies in bakery companies.

In relation to the internal and external factors that affect the productivity of the companies, the following results are generated: 25% of the interviewees stated that the internal factors (infrastructure, variety of products, machinery and equipment, hygiene (industrial and food), management and use of ICT; 15% indicated that the external factors (market competition, availability of raw materials, skilled labor, and national legislation), and 60% considered that both factors; this last result shows a marked influence of internal and external factors that in one way or another affect productivity in these companies, so it is important that in the future they are studied and analyzed in depth.

Discussion and conclusions

Derived from the answers obtained in each section of the instrument applied to the managers of the bakery companies in the Municipality of Campeche, Mexico. This is followed by a discussion and conclusions.

In the first section on ICTs, there is a clear trend towards the need to incorporate them in companies, since they provide them with agile and timely information in real time, which improves decision making by the managers of these organizations. One of the main uses of ICTs at the enterprise level are the digital business platforms, which, as can be seen in the bakeries of the Municipality of Campeche, there is a lack of knowledge of this digital infrastructure.

It should be noted that the ERP (Enterprise Resource Planning) platform is a complete system and provides integrated tools that are necessary as a technological support resource, since it is a software designed to manage and integrate business functions such as finance, human resources, supply chain and inventory management in a single system, supply chain and inventory management in a single system, which is why, it is considered important that, in this case bakeries, can use this type of platforms, as well as continue to provide the proper use of social media, such as Google, Facebook and Instagram, which are the most used by customers of bakeries to search for products.

It is important to note that digital business platforms are often confused with social media used to promote offers, follow up with customers, show new presentations of the goods produced and know directly what their customers think about the service provided, which in many cases allows to improve the quality and presentation of the products.

It is well known that when implementing a new technology, it is necessary to have specialized personnel, i.e., technically prepared to undertake the activities, and if they are not available, they must be trained. However, they recognize that if the employee has basic knowledge of ICTs, the training process is facilitated by the fact that it reduces costs, time, human and technical resources.

The results of the second section related to innovation in processes through the use of new technologies show that the interviewees consider it important to incorporate them. It should be noted that when companies have tools and equipment with new technologies, they are able to improve internal operations and have adequate resources to produce the good or service with quality, and therefore, meet the requirements of their customers and market demand, becoming more competitive resources to produce with quality the good or service, and therefore, meet the requirements of its customers and market demand, becoming more competitive, while those that do not invest in technology are lagging behind, thus losing their

ability to compete with other companies within the same sector where it operates, and therefore not be inserted into the process of globalization of markets.

Regarding the modifications in the product, process or image during the time of operation in the companies under study, in the opinion of the interviewees, the greatest modifications are made in the internal and external image, in their products specifically adding some technological advances in the presentation of these and in a lesser proportion in their processes with the acquisition of machinery and equipment to modernize production.

It is pertinent to point out that the modifications that are implemented in bakery companies in products, processes or image, come from suggestions from customers, which are considered important, since they generally emanate from people when they use social media, who have the role of demanding a better quality of the product they receive; also the experience of the owner for being in that market gives him the necessary knowledge to value the quality of the product that his company is offering, and he can receive the opinion of specialists in the same field. In relation to the modifications made using research are more precise, these are supported by institutions that perform such functions, so they are generally very scarce. Any modification made in the production process of a company is important because it allows each of them (products, processes or image) to adapt to new technologies.

Regarding the reasons that impede innovation in bakery companies. In the opinion of the interviewees, they are practically concentrated in the lack of knowledge of the managers or owners about the new technological advances in the productive processes, in agreement with the indifference they show towards the management of technology, which is supported by the high costs that they cause, since they do not have sufficient capital, encountering a barrier such as the lack of financing from the state and the private sector that in many cases do not contribute to facilitate credits for the interested parties.

Finally, in the third section, the increase in productivity due to technological changes is analyzed, where it is discussed whether it is necessary to train employees when acquiring new technologies. Thus, the interviewees stated that it is necessary for personnel to be trained in the use of new equipment or tools. It is pertinent to mention that this training in many cases is provided by the company itself, however they start from the principle that it is important that the selected personnel should have basic knowledge, which allows minimizing costs and the estimated time for training, considering that the implementation of updated technologies contributes to the increase of productivity, which is reflected in competitiveness, higher income to the organization, being able to insert itself within the global market, as well as to create companies in other regions, which in one way or another allow the consolidation in new markets and/or in global markets.

In reference to the internal and external factors that influence the productivity of the companies; in this sense, in the external factors (competition in the market, availability of raw materials, specialized labor, and national legislation), the management has no control, so it is necessary to generate strategies to foresee situations, therefore, a permanent analysis of the variations in the external environment of the company is convenient. Unlike internal factors (infrastructure, variety of products, machinery and equipment, hygiene (industrial and food), management and use of ICT), these are controllable and are considered opportunities for productivity improvement because they occur within the company. In the opinion of those interviewed, 60% of the companies, both internal and external factors affect their productivity, a situation that is not studied in depth in this research because it is not the objective, however, motivated by the results generated, it is suggested to carry out a study in which these factors are analyzed in the bakery companies.

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