

Methodological proposal to improve organizational innovation in the logistics sector of Cartagena, Colombia

Propuesta metodológica para mejorar la innovación empresarial del sector logístico en Cartagena, Colombia

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Abstract

This paper aims to design a methodological proposal to improve the innovation of companies belonging to the logistics sector in Cartagena, Colombia. The multiple case study methodology was applied, where nine axes that directly affect organizational innovation (strategy, culture, planning, people, tools, products/services, processes, efficiency, and capitalization) were analysed. The sample consisted of five Logistics Service Providers located in Cartagena. Among the main results of the research, it was found that planning is fundamental for improving organizational innovation because it is essential to have a stipulated strategic direction and to design a plan to propitiate an innovative culture in the company. Additionally, the company's diagnosis showed that most have innovative resources and processes; however, they do not have the necessary tools to implement the processes effectively. Finally, four of the five companies are working to develop an innovative culture, which places culture as the second most crucial axis after planning. These results led to the proposal of a methodology that seeks to improve organizational innovation levels and mainly focuses on three phases: Strategic Direction, Processes, and Results.

Summary: Introduction, Materials and Methods, Results and Discussion and Conclusions.

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Keywords: Innovative Culture, Planning, Organizations, Processes, Methodology, Logistics Operator.

Resumen

Este trabajo investigativo busca estructurar una propuesta metodológica para mejorar la innovación de las empresas pertenecientes al sector logístico en Cartagena, Colombia. Se aplicó la metodología de estudio de casos múltiples, donde se analizaron nueve ejes que inciden directamente en la innovación organizacional (estrategia, cultura, planificación, personas, herramientas, productos/servicios, procesos, eficiencia y capitalización). La muestra estuvo conformada por cinco Operadores Logísticos ubicados en Cartagena. Entre los principales resultados de la investigación se encontró que la planeación es fundamental para mejorar la innovación organizacional debido a que es fundamental tener un direccionamiento estratégico estipulado y diseñar un plan para propiciar una cultura innovadora en la empresa. Adicionalmente, el diagnóstico de las empresas arrojó que la mayoría cuentan con recursos y procesos innovadores; sin embargo, no cuentan con las herramientas necesarias para implementar los procesos de manera efectiva. Finalmente, cuatro de las cinco empresas están trabajando para desarrollar una cultura innovadora, lo que sitúa la cultura como el segundo eje más importante después de la planificación. Estos resultados llevaron a la propuesta de una metodología que busca mejorar los niveles de innovación organizacional y se enfoca principalmente en tres fases: Dirección Estratégica, Procesos y Resultados.

Palabras clave: Cultura Innovadora, Planeación, Organizaciones, Procesos, Metodología, Operador Logístico.

Introduction

Innovation management is an important source of sustainable growth and a determining factor in achieving competitive advantages (Nimfa et al., 2021; Tali et al., 2021), which allows companies to remain and succeed in a complex organizational environment composed of uncertain markets.

There are different positions and approaches of academics and researchers on the concept of innovation. Schumpeter (1934) states that in capitalist systems, companies remain in an evolutionary process of new goods and services, new methods, and market and organizational structures. From this evolutionary process lies the importance of innovation. Innovation, according to Chesbrough et al. (2018) and Lavikka et al. (2021), is not about generating new value or creating new things (inventions) but about creating value for customers, therefore, for the company.

Drucker (2002) defines *innovation* as the effort to create a change with a defined purpose and commercial or organizational potential. He also stated that having ideas was easy and having good ideas were complicated. However, what is vital for the company is constantly generating good ideas and materializing them in products, services, or processes. On the other hand, Gault (2020) and Goldman & Gabriel (2005) say that *innovation* is found everywhere, since innovation is spoken of in the scientific and technical literature, but also the social sciences. Hence, innovation has become an emblem of society used to solve many of the problems that arise in an unstable environment.

Currently, the phenomenon of innovation is being studied from a multidimensional perspective, which includes several types of innovation, such as innovations in product,

process, marketing, and organization; the latter being the type of innovation to be analyzed in this research (Koren & Palčič, 2015; Lalic et al., 2019, 2017; Palčič et al., 2020).

According to Machado & Davim (2020), when academic literature speaks of organizational innovation, reference is made to three large areas of study: a) the innovation itself, b) the different types of innovation in organizations, and c) changes in the structure of the organization.

Organizational innovation affects the price and the quality (differentiation of goods and services). The European Union (European Commission, 1995) describes it as the mechanisms that generate internal business interactions and make up the networks with which the organization communicates with its environment. Finally, the OECD (2018) defines *innovation* as implementing new methods in business practice, jobs, and company-environment interactions.

The organizational innovation model of the COTEC Foundation (2013) states that innovation management is based on five interdependent stages: focus, training, implementation, monitoring, and learning. Additionally, they consider that innovative attitudes in companies are opt for innovation, recognize it as an operation, and value innovation. The COTEC Foundation is widely recognized in innovation due to the models and methodological tools it has developed, as well as the reports about the state of innovation in different sectors that it has published (Mathison & Primera, 2007; Ortiz, 2016). In this sense, different authors have referenced the reports, models, and tools developed by COTEC to carry out their research. Among these authors we can mention Atehortúa (2022), Casas and Urrego (2013), Doumecq et al. (2013), and D'Alvano and Nuchera (2011). All of the aforementioned confers validity to using the COTEC model for the methodological proposal developed in this research.

Based on the above, this research article aims to develop a methodology for the improvement of organizational innovation in the logistics sector of Cartagena, Colombia; a sector that has been a beneficiary of the neoliberal policies of economic opening implemented by the Colombian government in recent years. In fact, according to Foreign Trade Statistical System -DIAN-SIEX-, Cartagena is the most important customs office in Colombia, with a value of US\$ 19,639 million, which corresponds to 47.6% of the total products processed in the country and sent abroad in 2021 (Direction of Taxes and Customs in Colombia, n.d.).

Despite the above, some drawbacks affect the competitiveness of Cartagena's logistics sector, such as the lack of technological development in transport systems and port terminals and the insufficient incorporation of track and trace technology to implement the "last mile" in e-commerce logistics (Arrieta Rodríguez et al., 2018). Based on the preceding, Arrieta Rodríguez et al. (2018) indicate that there is a need for companies in the logistics sector to develop innovation strategies that allow them to differentiate themselves and be more competitive internationally.

The methodology used for the developing this quantitative and explanatory research was the study of multiple cases, considering that the analysis of organizational innovation is complex and implies the study of multiple participants. This case study was delimited to five companies in Cartagena's logistics sector, which were subjected to structured surveys in order to determine their levels of organizational innovation based on the Organizational Innovation Model developed by the COTEC Foundation (2013). This tool that has had a great impact on the academic community and has been used as a guide for the development of research such as the one presented here.

In general terms, this paper consists of an introduction with a review of the postulates of theoretical references that have contributed to the construction of innovation concepts, delving into organizational innovation. Next, the methodology used to determine and analyze the levels of organizational innovation in logistics companies is presented in order to subsequently develop the proposed methodology to improve the levels of organizational innovation in these companies. Finally, conclusions or final considerations are shown as results of the findings obtained during the research process.

Materials and Methods

A multiple case study was carried out to develop this research. It is a methodological tool widely used in organizational studies (Yin, 2014). It is the most appropriate strategy when seeking to answer how and why a contemporary phenomenon occurs when the researcher has little control over the facts and events (Yin, 2014). For Mills et al. (2010), case studies can be defined as in-depth research on data obtained in a given period from one or more companies, in order to analyze the context and the processes involved in the phenomenon under study. In this sense, this case study is presented as empirical research that studies a contemporary phenomenon (organizational innovation) within its real context, with no visible limits between the phenomenon and the context. For this purpose, different sources of information are used.

Case studies can be simple when they refer to one company or multiple when two or more companies participate (Yin, 2014). In this research, the explanatory multiple case study methodology is used in order to understand the causes of the phenomenon under study through fieldwork that allows inducing hypotheses that explain the organizational variables to be analyzed. To define the number of companies to be included in the design of multiple cases, it was taken as a point of reference the research of influential authors such as Gonzalez (2016); Nagano et al. (2014); Orth et al. (2021); Santa-Maria et al. (2021) and Tarafdar & Gordon (2005). They have used around five analysis units (companies in this case) for innovation-related studies. Stake (2013) stated that the greater the number of cases, the greater the understanding of the problem. However, the number of cases will rather depend on the economic resources and the time available to the researcher. Five analysis units were selected in this specific study, which is an adequate number of cases according to the literature reviewed. At the analyzed companies' request, proper names were omitted, and the following abbreviations were used instead: PTOM, PTOS, MROL, SERP, INTG.

The companies selected for the study are logistics service providers that carry out foreign trade activities and are recognized in Cartagena. These are SME companies willing to supply all the internal documentation required for the research. The methodological tool developed by the COTEC Foundation is aimed to analyze SME companies' innovation capacity from different economic sectors and offers recommendations to improve their situation (COTEC Foundation, 2013; El País, 2013). Therefore, the sample selected in this study applies to this methodology.

As mentioned before, data gathering techniques used were surveys, semi-structured interviews, documentary reviews, and direct observation. The surveys were used to analyze the current status of organizational innovation in the companies under study. They were adapted from a technological innovation model developed by the COTEC Foundation, which assesses the foundations of a business model for innovation in SMEs. The COTEC Foundation's SME Self-Assessment instrument comprises 36 questions with Yes/No response options. Additionally, with the approval of an academic expert in innovation, the research team, added other response options to some questions such as: Which ones? have you used them? How? The previous in order to validate the data initially collected with the main response options

(Yes/No) (COTEC Foundation, 2013). The expert opinion is a technique used for the validation and adaptation of questionnaires (Blasco et al., 2010; Pamies et al., 2020; Ruiz & García, 2013).

There are different methodologies to measure the level of innovation in SME companies, such as: The Potential Innovation Index (Enjolras et al., 2014), the AIDA approach (Petit et al., 2011), the Fuzzy Logic Set methodology (Attallah et al., 2019), models based on Key Performance Indicators (Banu, 2018) and Community Innovation Surveys (Jones-Evans et al., 2018), among others. However, the COTEC Foundation model was selected for the population under study - Logistics Service Providers in Cartagena, Colombia - due to its transversality, its applicability in SMEs and the usefulness of the models developed by COTEC in different research works such as those of Aterhortua (2022), Casas and Urrego (2013), Doumecq et al. (2013), and D'Alvano & Hidalgo (2011).

Additionally, this model provides a good basis to build upon due to its comprehensiveness and since it considers different variables of the innovative attitude in the organization such as culture, strategy, planning, people, processes, tools, goods/services, efficiency, and capitalization – see Table 1-

Table 1

Description of the Organizational Innovation Axes

AXIS	DESCRIPTION
Culture	Dissemination of innovation information to employees, management of innovation processes with suppliers, good relationship with clients, reward for contributing new ideas, the company's management motivates employees to innovate, innovation issues are discussed in executive meetings.
Strategy	Attendance at fairs and innovation events, the existence of specific innovation objectives within the organizational plan, knowledge of government programs to support business innovation, new goods or services are advertised, the existence of strategic alliances with training centers and universities.
Planning	the company draws up innovation plans and projects, establishing a specific company budget for innovation activities.
People	Regular staff training on innovation aspects.
Processes	Formalized processes to participate in government programs to promote business innovation and having a department dedicated to innovation procedures.
Tools	Availability of tools and indicators to measure innovation in the company.
Products/Services	Launching new products and/or services on the market, improvement of existing products and/or services, innovation in marketing processes.
Efficiency	Availability of a system to value and measure intangible assets and productivity related to innovation.
Capitalization	Increase in intangible assets.

Source: prepared by the authors, based on COTEC Foundation (2013)

In order to comply with the organizational innovation axes, a company should have more than 80% compliance. The ideal state of organizational innovation is reached when all the axes are fulfilled. Each of the nine axes measures specific aspects of organizational innovation. Companies reach the axis' required level of organization when they meet most of the questions in that axis.

Each of the axis has a specific quantity of questions out of the total surveys questions. In this sense, the culture axis has eight questions, strategy eight questions, planning two questions, people three questions, processes five questions, tools two questions, products/services four questions, efficiency two questions, and capitalization two questions. Each question has a proportional weight; for example, the process axis – which has five questions –has a percentage value of 20% each.

Based on the above, if a company meets all the questions of a specific axis, it gets 100% compliance. However, if it does not comply with some questions, its compliance percentage decreases proportionally to the weight of each unfulfilled question.

For its part, the documentary review is a primary source of information that provides relevant data on the company's processes. For this, access to the organizations' strategic plan, annual reports, procedural manuals, technical and commercial value proposition documents, and financial documentation was requested. These reviews are important to compare with the responses provided during the surveys and allow to check whether the innovation processes are properly documented in the company. Additionally, there was a review of public documents of the companies, web pages, and studies of the logistics sector in Cartagena. All of the foregoing is useful to analyze which aspects of organizational innovation are duly documented in the companies under study and to give meaning to the results obtained in the surveys. As mentioned, the survey results and their comparison with the business documentary information were validated using the expert criteria technique (Pamies et al., 2020).

The semi-structured interviews were applied to experts in the logistics sector who made it possible to contextualize and analyze the results obtained from the surveys and the documentary review. Additionally, with their experience and knowledge of the logistics sector, it was possible to structure a methodology according to the needs of the companies under study, which could be projected towards other companies in the sector.

Finally, with the information collected and thanks to the different data gathering techniques, an analysis was carried out, which allowed the design of the proposed methodology to improve organizational innovation in the logistics sector companies in Cartagena, Colombia.

Results and Discussion

Diagnosis of Organizational Innovation

The results obtained from the nine pillars or axes proposed in the methodology allow us to determine the current state of organizational innovation in companies under study. The results of each of the five companies under study are described in detail below.

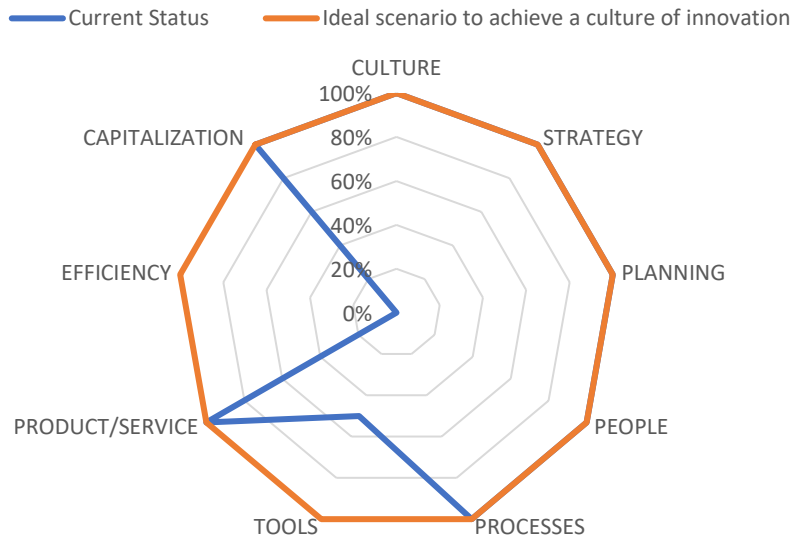
In the case of PTOM company – see Figure 1- it can be observed that it reaches an ideal level of organizational innovation in the axes of culture, strategy, planning, people, processes, products/services, and capitalization. On the other hand, in the axes of tools and efficiency, the ideal level of organizational innovation is not reached due to the inexistence of an innovation department or an accounting system to identify the value of the company's intangible assets.

Figure 2 shows that PTOS company have ideal levels of organizational innovation in the axes of culture, planning, people, tools, products/services, and efficiency, whereas it did not reach the required levels in the axes of strategies, processes, and capitalization.

Figure 3 shows that MROL company reached the levels of organizational innovation in the axes of culture, strategy, planning, people, and capitalization. However, in the axes of processes, tools, products/services, and efficiency, the required level was not reached.

Figure 1

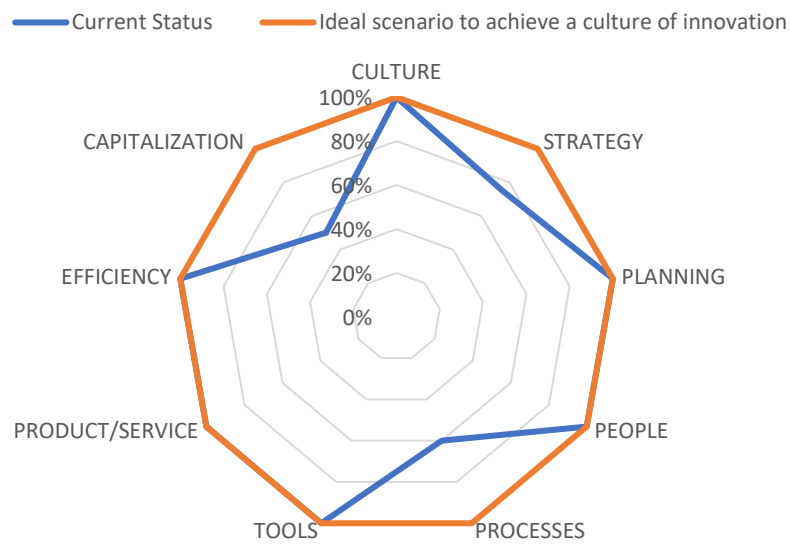
Innovation variables in PTOM company



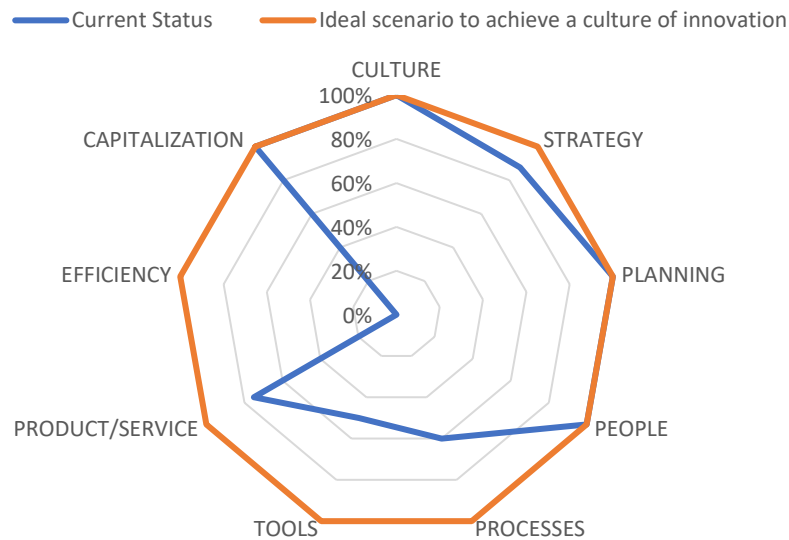
Source: prepared by the authors, based on COTEC Foundation (2013)

Figure 2

Innovation variables in PTOS company

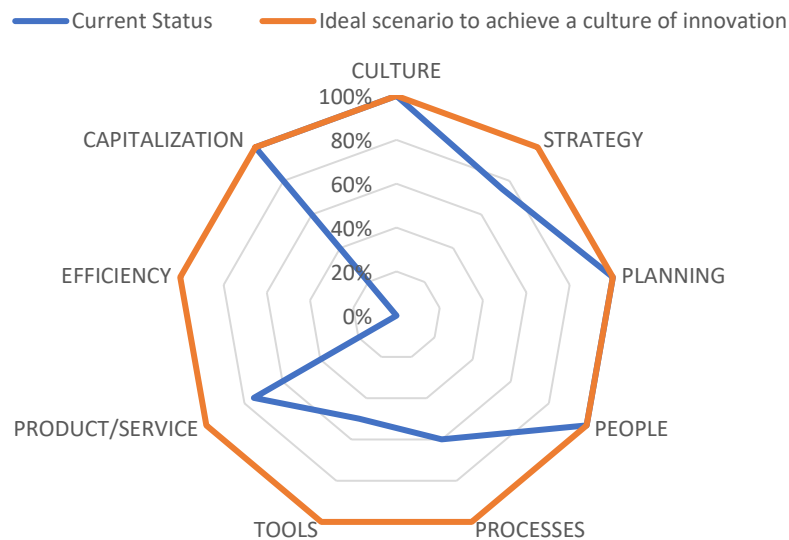


Source: prepared by the authors, based on COTEC Foundation (2013)

Figure 3*Innovation variables in MROL company*

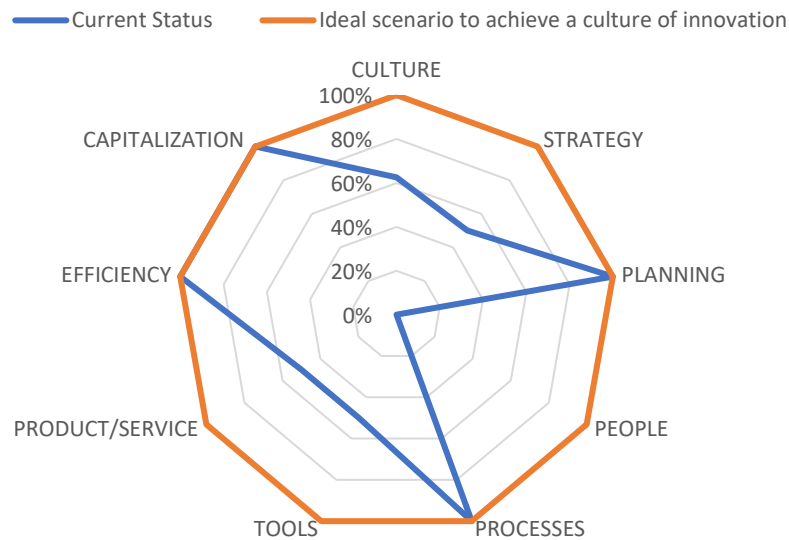
Source: prepared by the authors, based on COTEC Foundation (2013)

For its part, Figure 4 shows that SERP company stood out with acceptable levels of organizational innovation in the axes of culture, planning, people, and capitalization. However, it did not reach the required levels in the axes of strategy, processes, tools, products/services, and efficiency.

Figure 4*Innovation variables in SERP company*

Source: prepared by the authors, based on COTEC Foundation (2013)

Finally, Figure 5 shows that INTG company reached acceptable levels of organizational innovation in the axes of planning, processes, efficiency, and capitalization. On the other hand, the required level in the axes of culture, strategy, people/means, tools, and products/services was not reached.

Figure 5*Innovation variables in INTG company*

Source: prepared by the authors, based on COTEC Foundation (2013)

In general terms (as seen in Table 2), none of the companies analyzed reached an ideal state of organizational innovation. PTOM was the company that achieved the highest level of compliance with the axes of business innovation (culture, strategy, planning, people, process, product/service, and capitalization). Conversely, INTG was the company that showed the lowest level of compliance achieving only four axes (planning, processes, efficiency, and capitalization).

Regarding the axes, the one that obtained the highest degree of compliance was planning, which was fulfilled in each company. In contrast, the axis related to the tools was the one with the lowest level of compliance (acceptable results were achieved in only one company). The foregoing shows that companies are approving budgets to develop innovation projects. However, companies do not have sufficient physical and technological tools to execute those projects, implying a barrier in their materialization.

Table 2*Organizational innovation level of compliance in companies under study*

AXES/COMPANIES	PTOM	PTOS	MROL	SERP	INTG
Culture	YES	YES	YES	YES	NO
Strategy	YES	NO	YES	NO	NO
Planning	YES	YES	YES	YES	YES
People	YES	YES	YES	YES	NO
Processes	YES	NO	NO	NO	YES
Tools	NO	YES	NO	NO	NO
Product/ Service	YES	YES	NO	NO	NO
Efficiency	NO	YES	NO	NO	YES
Capitalization	YES	NO	YES	YES	YES

Source: Own elaboration

Methodological proposal for the improvement of organizational innovation

The strategic diagnosis showed that planning process is vital for developing an innovative culture in the organization and executing innovative corporate projects. However, the diagnosis also showed that companies do not have the necessary tools to carry out these planned innovation initiatives. These results are crucial when designing the methodological proposal for the improvement of organizational innovation in the population under study, as it is described below:

Firstly, planning is fundamental for improving organizational innovation because it is essential to have a stipulated strategic direction and to design a plan to propitiate an innovative culture in the company. The importance of planning is demonstrated when 100% of the companies analyzed comply with this axis. In this sense, the proposed methodology must start from a planning or strategic direction focused on organizational innovation.

Additionally, it is important to ensure the availability of resources, formalized processes, and tools to carry out organizational innovation projects. The companies' diagnosis showed that most companies have some innovative resources and processes. However, some of the companies did not have tools such as laboratories, specialized software for Business Intelligence, Blockchain technology for the implementation of Smart Contracts, and automated equipment for storage logistics. The lack of these tools impedes the effective implementation of processes; therefore, the innovation tools must be essential in the proposed methodology.

Finally, four of the five companies analyzed are working to develop an innovative culture, which places culture as the second most vital axis after planning. The aforementioned may indicate that achieving an innovative culture should be a relevant factor in the proposed methodology for organizational innovation.

It is relevant to mention that the proposed methodology has limitations in its application because the foreign trade logistics sector of Cartagena includes different members, such as customs agencies, port terminals, shipping companies, land carriers, practical pilot service companies, tug service companies, customs warehouses, logistics operators, international cargo agents, and diving service companies. Each of them has different processes for the execution of their business activities. Hence, it is difficult to design a methodology that fully adjusts to all the companies belonging to the different links of the supply chain, even though these companies have a common denominator: to achieve a smooth operation of foreign trade and its inherent logistics activities. For this reason, it should be clarified that this methodological proposal applies to Logistics Service Providers, the type of company selected to carry out this study.

The guidelines of this methodology are presented taking into account the results of the diagnosis implemented with the companies under study and the methodological proposals of theoretical references such as Beltrán & Pulido (2012) and Cândido et al. (2015). Among the variety of factors used in their research, they point out the importance of strategic design, processes, and results.

Based on the above, this methodological proposal starts from the STRATEGIC DESIGN variable since the research results showed that innovation is an issue that should be conceived from the strategic level and make it flow to the other hierarchical levels of the organizations in a coordinated way. Then, the PROCESS variable refers to the processes, tools, and activities required to promote innovation in the company. Finally, the RESULTS variable is included to identify the results of all the innovation management implemented with the

previous variables. Each of the above variables will be described in-depth, and some management indicators will be designed for control, monitoring, and follow-up purposes:

Table 3

Methodological variables for the improvement of organizational innovation in the Strategic Design phase

PHASE	VARIABLES	DESCRIPTION
Strategic Design	Senior Management	This is the head of the organization (Partners); inclusion of innovation in the corporate values, mission, vision and objectives of the organization. The objectives set must be achievable and consistent with reality.
	Resources	Allocation of an economic budget for the management of innovation, authorization to involve all the human talent that makes up the organization in its different departments, authorization of spaces and time to carry out innovation activities. In this sense, innovation is not seen as a waste of time.
	Search and identification of human resources for innovation	Identification of the leader and person responsible for innovation management who must inspire the rest of the organization. Search, participation and evaluation of innovation groups by departments. These groups for innovation management includes different professionals from different areas.

Source: own elaboration

Table 4

Indicators of methodology variables for the improvement of organizational innovation in the Strategic Design phase

PHASE	VARIABLE	INDICATOR
Strategic Design	Senior Management	Corporate objectives aimed at innovation/ Total Corporate objectives
	Resources	1) Economic resource authorized for innovation/ Total income 2) Authorized time for innovation/ Total working hours
	Search and identification of human resources for innovation	Percentage of compliance with the required profile

Source: own elaboration

Table 5

Methodological variables for the improvement of organizational innovation in the Processes phase

PHASE	VARIABLES	DESCRIPTION
Process	Tools	Equipment and technologies, surveys, R+D+I department, management systems for innovation. To innovate, it is necessary to be organized, therefore the existence of management systems that guarantee the organization of the company is important.
	Internal and external sources of innovation	Participation of all employees, suppliers, customers, port, customs and environmental authorities, universities, and community in the innovation activities. In other words, all the agents from which information necessary for the generation of innovation can be obtained. Institutional actors are also involved in this variable and strategic alliances are generated in order to promote an adequate innovation ecosystem. This variable seeks to know the perception of the community about corporate social responsibility, since growth is not only conceived for the company, but for the territory where it is located and it must be aligned with regional development plans. These activities can be implemented through the formation of work networks with representatives belonging to each of the aforementioned stakeholders. In these meetings specific commitments must be established which must be recorded in minutes with responsible individuals and compliance deadlines.

PHASE	VARIABLES	DESCRIPTION
	Process innovation management	Commercial, operational and administrative management. Inclusion of innovation in the main processes that make up the business activity of the company.
	Plan of activities for innovation	Meetings, dissemination of information, brainstorming, entertainment and recreation activities that provide a setting for the generation of ideas; economic and verbal motivation for employees; participation in innovation fairs; innovation projects and training for innovation.

Source: own elaboration

Table 6

Indicators of methodology variables for the improvement of organizational innovation in the Processes phase

PHASE	VARIABLE	INDICATOR
Process	Tools	1) Management systems with modules specialized in innovation / Total management systems used in the company 2) Total technological resources authorized for innovation management / Total resources used
	Internal and external sources of innovation	1) Total of internal sources of information for innovation / Total of internal sources 2) Total of external sources of information for innovation / Total of external sources
	Process innovation management	Total of main processes that include innovation / total of main processes
	Plan of activities for innovation	Total activities executed for innovation / Total activities planned for innovation

Source: own elaboration

Table 7

Methodological variables for the improvement of organizational innovation in the Results phase

PHASE	VARIABLES	DESCRIPTION
Results	Model or prototype	Design of the innovation process in the company, in this way the dynamics of innovation will be easier and it should be disseminated to all the employees involved.
	Adequate accounting systems	As a result of the innovation, an adequate accounting system is found, which is adapted to the innovation management and allows identifying the intangible assets generated by the innovation process. The growth of sales as a result of the innovation management and the improvement of the services provided.
	Efficiency	Lower costs in service operations provided, innovative processes that allow a quicker provision of the service.
	Culture	Change in the behavior of employees oriented towards innovation. Habits, permanent motivation, experimentation, breaking the status quo, frequency of meetings, appropriation of knowledge for innovation. There must be knowledge transfer, capture and appropriation of new knowledge. Innovation becomes part of the organization's DNA.

Source: own elaboration

Table 8

Indicators of methodology variables for the improvement of organizational innovation in the Processes phase

PHASE	VARIABLE	INDICATOR
Results	Model or prototype	Number of improved processes / Number of innovation activities
	Adequate accounting systems	1) Total sales invoiced as a result of innovation activities / Total investment for innovation 2) Total intangible assets resulting from innovation activities / total intangible assets Note: Intangible assets generated internally by innovation activities will be measured in accordance with the provisions of the International Accounting Standards (IAS): "The cost of an internally generated intangible asset, for the purposes of the initial measurement, will be the sum of the disbursements incurred from the moment in which the element meets the conditions for its recognition, established in relation to the conditions necessary to be an asset and to be recognized". This condition can be found on IAS 38.
	Efficiency	Operating costs for service provision prior to implementation of innovation activities - Operating costs for service provision after implementation of innovation activities
	Culture	1) Total monthly meetings to discuss innovation issues / total monthly meetings 2) Total New Ideas Submitted by Employees / Total New Ideas Approved by Employer 3) Total working time dedicated to innovation activities / Total working time

Source: own elaboration

The methodological proposal presented above, arises from the results obtained in the strategic diagnosis of the companies under study. Additionally, the expert opinion method was used to validate the elaboration of the phases, the variables, and the indicators of the methodology proposed. The expert opinion has been widely used as a validation instrument for methodological proposal in the field of innovation (Monsonís-Payá et al., 2017).

Conclusions

This research showed the current state of organizational innovation of five companies in the logistics sector in Cartagena, showing that none of them has been able to reach an ideal state of organizational innovation. This result is because they do not fully comply with the nine axes used to measure innovation in these companies (culture, strategy, planning, people, processes, tools, product/service, efficiency, and capitalization).

On average, the companies analyzed reach levels of innovation above 80% in five of the nine measured areas, which shows the need for logistics companies to improve their levels of organizational innovation to reach the ideal state (100% on all nine axes). Based on the foregoing, the methodological proposal for improving organizational innovation was structured.

The methodological proposal was designed considering the importance of the planning axis in the companies analyzed. The relevance of the planning axis positions it on the first phase of the methodological proposal which focuses on strategic direction.

Additionally, the proposal considers the interdependence shown by the axes of processes and tools, which must be developed jointly to get better results. The importance of the interdependence between processes and tools was evidenced in the strategic diagnosis, which showed that most companies have processes and resources dedicated to innovation. However, they do not have tools such as specialized software, blockchain technology, and automated equipment to implement those innovation processes effectively. For this reason, the methodological proposal in its Process phase contains a Tool variable to ensure that companies have the necessary tools to implement their innovation processes.

Finally, it tends to create an innovative culture since companies will be innovative when their members internalize an ideology focused on creativity and develop habits for generating new ideas.

Despite all the efforts that are being made in the logistics companies in Cartagena, it is evident that they still have some weaknesses in the management and generation of innovation. Therefore, it is important to make available methodological tools like this one, which intend to improve levels of organizational innovation.

For future stages of this research, it is expected to implement the proposed methodology in the five selected companies. Then, carry out a comparative analysis to determine if there was an improvement in the levels of organizational innovation. Finally, the academic community is invited to carry out studies like this in other economic sectors in order to provide companies with methodological tools to improve their innovation levels and, hence, their competitiveness.

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