

Knowledge management and innovation of a company with organic banana export potential

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Abstract- *This research, aligned with ODS N° 8: Decent work and economic growth, had the general objective of determining the relationship between knowledge management and innovation in a company with organic banana export potential in Sullana, Peru, during the period 2024 - II. The specific objectives focused on identifying the relationship between knowledge management and the product/service, process, commercial and organizational dimensions of innovation. This is an applied research with a quantitative approach, correlational type and with a non-experimental and cross-sectional design. The study population was 70 employees of the company, from which a census sample of 40 was selected. The results indicated that there is no significant relationship between knowledge management and innovation in the company studied. Although a high level of knowledge management is perceived, it does not translate into a greater capacity for innovation. It is concluded that knowledge management in the company is not yet applied in a strategic way to drive innovation.*

Key words: *knowledge management, innovation, companies, economic growth, banana.*

I. INTRODUCTION

Knowledge management and innovation have significantly influenced the improvement of different internal aspects of organizations such as platforms, advertising and technology, among others. Therefore, in the business landscape, they emerged as pillars of success and competitiveness at the international level. In fact, WIPO (2021) [17] reported that global investment in science and innovation was 5.8% between 2019 - 2020, and technological advances reached 10.4%, while R&D spending increased by 10%, 60% of companies with high research reported higher investments.

WIPO (2021) [17] also noted that, in Latin America, only Mexico, Chile, Brazil and Costa Rica ranked among the top 60 countries in innovation. However, only Mexico showed consistent progress over the last 10 years. Meanwhile, economies such as Iran and Peru exceeded expectations in innovation despite the challenges.

Minagri (2020, cited by Silupú et al., 2023) [22] highlighted Peru as an important banana exporter, with shipments of 221,266,136 kg equivalent to US\$ 152,342,846, mainly to Europe, Asia and the U.S. For its part, the Piura region was consolidated as a world leader in the supply of

organic bananas, certifying 121,423 tons in 2020 for Asia, North America and Europe, supporting more than 9000 hectares of crops. For this reason, the Promperú export route test was used to determine whether or not the organization really had export potential before conducting the research.

According to the Peruvian Ministry of Production (2023) [13], 99% of MYPIMES face barriers in the use of digital technologies, such as complexity (37.7%) and lack of information (36.4%). Limited training for collaborators represents 32.5%. These problems are related to QA and HR. In addition, 22.7% of organizations do not prioritize the adoption of digital technologies, which leads to design policies to reduce these gaps.

Based on this, the research posed the following general problem: What is the relationship between knowledge management and innovation in a company with organic banana export potential, Sullana - 2024?

For this reason, the general objective of this research is: 1) To determine the relationship between knowledge management and innovation in a company with organic banana export potential, Sullana - 2024, and the specific objectives are: 2) Identify the relationship between knowledge management and the product and/or service of a company with organic banana export potential, Sullana - 2024; 3) Identify the relationship between knowledge management and the processes of a company with organic banana export potential, Sullana - 2024; 4) Identify the relationship between knowledge management and the commercial aspects of a company with organic banana export potential, Sullana - 2024 and finally, 5) Identify the relationship between knowledge management and the organizational aspects of a company with organic banana export potential, Sullana - 2024.

From this point, the research was theoretically justified by several theories. V1 was based on "The knowledge-creating organization" by Nonaka and Takeuchi (1999) [19], and "Of resources and capabilities" by Penrose (1959) and Barney (1991) [24]. V2 was supported by Schumpeter (1911) [20] on "Economic development" and by Daft (1978) [14] with the "Double Core" theory. Thus, in the methodological aspect, a survey was used as a technique and a questionnaire as an instrument; these resources are useful not only for this research, but also as a guide for other researchers on similar

problems. As for the practical aspect, relevant information was provided on CG and innovation, guiding strategies to foster human talent and apply innovation, the organization studied is located in the province of Sullana, in the department of Piura.

II. THEORETICAL FRAMEWORK

Next, the theoretical bases that supported the research on knowledge management and innovation in a company with organic banana export potential, Sullana - 2024, were presented: Knowledge management was based on the theory "The knowledge-creating organization" by Nonaka and Takeuchi (1999, cited in Perdomo, 2023) [19]. These authors emphasized the importance of understanding the nature of knowledge and examined its creation from ontological and epistemological perspectives, emphasizing the interaction between tacit and explicit knowledge.

Likewise, the theory of resources and capabilities, presented by Penrose (1959) and developed by Barney (1991, cited in Villasana et al., 2021) [24], was considered, it focuses on the resources that allow firms to achieve sustainable returns, such as static resources, dynamic capabilities. and knowledge. Kristandl and Bontis (2007) and other authors (2018, cited in Villasana et al., 2021) [24] highlighted the importance of internal coordination, organizational structure and the role of management in decision making.

Therefore, in relation to innovation, the following theories were mentioned. Schumpeter (1911), in his theory of economic development, argued that innovation is the engine of the capitalist system and not just a catalyst for change. The entrepreneur is the key agent driving innovation by seeking scientific recognition. From this perspective, innovation is the main competitive weapon, with business and entrepreneurship as determinants of success. This approach highlights the entrepreneur as the central actor in innovation, driving the evolution of the capitalist system (Querejazu, 2020) [20].

Similarly, innovation is classified into technological and administrative, as proposed by Daft (1978, cited in Mendoza et al., 2022) [14] in the Dual Core theory. In this framework, administrative innovations reorganize activities in the company, while technological innovations improve processes and products. Damanpour and Gopalakrishnan (1998, cited in Mendoza et al., 2022) [14] indicated that the relevance of these innovations varies according to the needs of each organization.

III. METHODOLOGY

A. Type and design of research

The research was of the applied type, focused on detecting problems or opportunities in the environment and applying scientific knowledge to solve them (Sabino, 1996, cited in Castro et al., 2023) [4].

In this sense, a quantitative approach was worked, decomposing the whole into its fundamental components, moving from the general to the specific (Ñaupas et al., 2018, cited in Acosta, 2023) [1].

The hypothetico-deductive method was used, according to Gonzáles and Santiago (2023) [8] described it as a tool that, although it did not produce new knowledge, facilitated a deeper exploration and analysis of the implications of existing knowledge.

Finally, a non-experimental design was adopted, which, according to Arispe et al. (2020) [2], implies that the variables were not manipulated; instead, the phenomena were observed in their natural state for subsequent analysis.

B. Variables and Operationalization

Variable 1 comprised knowledge management, which is defined as an innovative approach to understanding knowledge creation in organizations, addressing integration that encompasses individual, group, organizational and interorganizational levels Nonaka and Takeuchi (1999, as cited in Perdomo 2023) [19].

The dimensions were made up of (1) knowledge creation, (2) knowledge organization, (3) knowledge distribution, (4) knowledge application.

Variable 2 was innovation, Varela (2008, as cited in Ampuero et al., 2020) [3] conceives it as the process by which ideas, models or concepts are presented in the market, offering them as products and/or services for acquisition by consumers.

It is sized (1) in product / service, (2) processes, (3) commercial and (4) organizational. The study is quantitative, with an ordinal measurement scale.

C. Population, sample and sampling

The population consisted of 70 collaborators. According to Hernández et al. (2010, cited in Contreras et al., 2022) [5], the population is the set of cases that meet specific criteria suitable for analysis. For this purpose, inclusion criteria were applied: employees on the payroll in the warehouse and administration areas and those who did not meet these requirements were excluded. We worked with a final sample of 40 employees.

In this context, census sampling was used, according to López (1998, cited in Contreras et al., 2022) [5], which refers to the inclusion of the entire population. Ramírez (1997, cited in Contreras et al., 2022) [5] states that this technique is characterized by the inclusion of all the units of analysis due to the small size of the population.

D. Data collection techniques and instruments

For data collection, the technique used is a survey and the data collection instrument used is a questionnaire. Archenti (2012, cited in Kats et al., 2019) [11] defined survey as a

method that obtains data using uniform questionnaires to explore aspects such as facts, attitudes and opinions.

Data validity was ensured by pilot testing the questionnaire in SPSS software, using a parametric test with significance ≥ 0.70 and Cronbach's Alpha to ensure consistency of results.

Obtaining a reliability of 0.8 for knowledge management and 0.78 for the innovation variable. In addition to ratifying the reliability of the instrument by means of three expert judgments. The instrument was applied in September 2024.

III. RESULTS

According to the general objective, which consisted of determining the relationship between knowledge management and innovation in a company with organic banana export potential, Sullana - 2024, the results were as follows:

Table 1 presents the Spearman correlation between knowledge management and innovation, with a correlation coefficient of 0.155 indicating a low positive relationship. Although a correlation is observed, its relationship in innovation is minimal. On the other hand, the bilateral significance value (sig. = 0.341) exceeds the 0.05 threshold, confirming that this relationship is not statistically significant.

Therefore, H_0 is accepted and H_1 is rejected, leading to the conclusion that knowledge management is not yet formally structured or strategically applied to drive meaningful innovations. In the reality of the cooperative, knowledge efforts tend to be more focused on basic operations such as organic banana production and export, rather than on exploring new ways to innovate.

TABLE 1
RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT AND INNOVATION

| | | | Knowledge management | Innovation |
|----------------|----------------------|-------------------------|----------------------|------------|
| Spearman's Rho | Knowledge management | Correlation coefficient | 1.000 | 0.155 |
| | | Sig. (bilateral) | | 0.341 |
| | | N | 40 | 40 |
| | Innovation | Correlation coefficient | 0.155 | 1.000 |
| | | Sig. (bilateral) | 0.341 | |
| | | N | 40 | 40 |

Note. The correlation is not significant 0.341.

According to objective 1, Identify the relationship between knowledge management and the product and/or service of a company with organic banana export potential, Sullana - 2024, the result was:

TABLE 2
RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT AND PRODUCT/SERVICE

| | | | Knowledge management | Innovation |
|----------------|----------------------|-------------------------|----------------------|------------|
| Spearman's Rho | Knowledge management | Correlation coefficient | 1.000 | 0.180 |
| | | Sig. (bilateral) | | 0.266 |
| | | N | 40 | 40 |
| | Innovation | Correlation coefficient | 0.180 | 1.000 |
| | | Sig. (bilateral) | 0.266 | |
| | | N | 40 | 40 |

Note: The correlation is not significant 0.266.

The relationship between the variables according to the correlation coefficient is 0.180, which means that there is a positive relationship, however, within the scale, it is a very low positive correlation. The bilateral sig. 0.266 means that there is no significant relationship, this is due to the fact that the value exceeds 0.05, it is possible that the efforts are concentrated more in the collection of information than in the practical implementation, which makes it difficult for the knowledge to directly influence the tangible improvements of the product or service.

Therefore, given the results obtained the hypothesis that is validated is H_0 and H_1 is discarded, this result reflects that, although knowledge management is being implemented within the organization, its relationship in the development or improvement of products/services is limited, this would reflect that the application of knowledge is not yet sufficiently optimized to generate significant improvements in the quality of organic bananas or in their commercialization.

According to objective 2, which consisted of identifying the relationship between knowledge management and the processes of a company with organic banana export potential, Sullana - 2024, the result was obtained:

TABLE 3
RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT AND PROCESSES

| | | | Knowledge management | Innovation |
|----------------|----------------------|-------------------------|----------------------|------------|
| Spearman's Rho | Knowledge management | Correlation coefficient | 1.000 | 0.110 |
| | | Sig. (bilateral) | | 0.499 |
| | | N | 40 | 40 |
| | Innovation | Correlation coefficient | 0.110 | 1.000 |
| | | Sig. (bilateral) | 0.499 | |
| | | N | 40 | 40 |

Note. The correlation is not significant 0.499.

The relationship between the variables according to the correlation coefficient is 0.110, which indicates that there is a positive relationship, however, it tells us that this value within the scale is located in a very low positive correlation. By yielding a bilateral sig. of 0.499 confirms that there is no statistically significant relationship between the two variables, this is because the value exceeds 0.05, which suggests that the internal processes of the organization such as production and logistics, work autonomously without depending on how knowledge is managed. This result validates H_0 and discards H_1 , showing that the relationship between the variables is not significant, aligning with the reality of the organization.

This suggests that, despite the efforts that may exist in the acquisition, distribution or application of knowledge, these do not present a significant relationship in the optimization or improvement of key operational processes, such as production, logistics or export management.

According to objective 3, which consists of identifying the relationship between knowledge management and the commercial aspects of a company with organic banana export potential, Sullana - 2024, the following was obtained:

TABLE 4
RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT AND BUSINESS

| | | | Knowledge management | Innovation |
|----------------|----------------------|-------------------------|----------------------|------------|
| Spearman's Rho | Knowledge management | Correlation coefficient | 1.000 | -0.062 |
| | | Sig. (bilateral) | | 0.704 |
| | | N | 40 | 40 |
| | Innovation | Correlation coefficient | -0.062 | 1.000 |
| | | Sig. (bilateral) | 0.704 | |
| | | N | 40 | 40 |

Note. Correlation is not significant - 0.062.

relationship between the knowledge management variable and the commercial dimension is -0.062 and therefore this value is negative. In this sense, the result according to the interpretation of the correlation coefficient scale indicates that the correlation is very low negative, suggesting that there is no significant relationship. On the other hand, the level of representativeness is 0.704, being greater than 0.05, the result is not statistically significant, which means that there is not enough evidence to suggest that there is a significant relationship between the two variables.

This result validates H_0 and rules out H_1 , which shows that the relationship between the variables is not significant, this means that, with the current data, it cannot be stated that

knowledge management influences the business area of the organization

Regarding objective 4, to identify the relationship between knowledge management and organizational management of a company with organic banana export potential, Sullana - 2024, the following results were obtained:

TABLE 5
RELATIONSHIP BETWEEN KNOWLEDGE AND ORGANIZATIONAL MANAGEMENT

| | | | Knowledge management | Innovation |
|----------------|----------------------|-------------------------|----------------------|------------|
| Spearman's Rho | Knowledge management | Correlation coefficient | 1.000 | 0.104 |
| | | Sig. (bilateral) | | 0.524 |
| | | N | 40 | 40 |
| | Innovation | Correlation coefficient | 0.104 | 1.000 |
| | | Sig. (bilateral) | 0.704 | |
| | | N | 40 | 40 |

Note: The correlation is not significant 0.704.

The correlation coefficient of 0.104 indicates that there is a positive relationship, however, within the scale, there is a very low positive correlation between knowledge management and the organizational dimension. Despite being positive, the relationship is almost insignificant in practice. Likewise, the bilateral sig. of 0.524, being greater than 0.05, confirms that there is no statistically significant correlation between the two variables.

This suggests that, in the cooperative, the way in which knowledge is managed is not having a considerable relationship in the organizational structure or functioning. Since the significance value is so high, the null hypothesis H_0 is accepted and the alternative hypothesis H_1 is discarded, which is consistent with the reality of the cooperative, where knowledge management practices do not seem to be significantly related to decisions or changes at the organizational level.

IV. DISCUSSION

As is known, the main purpose of this research was to determine the relationship between knowledge management and innovation in a company with organic banana export potential, Sullana - 2024. The results revealed a positive, although weak, evaluation (0.155), which did not reach statistical significance (bilateral sig. = 0.341). This finding suggests that, although there is some relationship between the two variables, innovation within the cooperative is limited. This result is partially aligned with previous studies that highlight the relevance of knowledge management as a driver of innovation, researchers such as Mochammad et al. (2024)

[15] and Nava (2021) [16] who argue that effective knowledge management can improve the competitive capacity and adaptability of companies, since it facilitates the creation of more innovative management processes. However, in the case of the organization, KM has not been implemented strategically to generate significant innovations.

To further explore the relationship between knowledge management and innovation, four specific dimensions were analyzed: For the first dimension, the valuation between knowledge management and the product/service dimension was very low (0.180) and not significant (bilateral sig. = 0.266). This suggests that, despite efforts in knowledge management, these are not reflected in tangible improvements in organic banana quality or marketing. For the process dimension, the observed score was also very low (0.110) and not significant (bilateral sig. = 0.499), indicating that knowledge management is not significantly related to the optimization of key processes, such as production and logistics. This could be due to the fact that the cooperative's operational processes operate in isolation from KM.

In the third dimension, the relationship between knowledge management and business was presented as a very low negative trade-off (-0.062) and not significant (bilateral sig. = 0.704). This finding suggests that knowledge management is not having a notable relationship in the commercial strategies of the organization, this may be due to the lack of connection between knowledge management and the commercial area, which prevents the information generated from being used in decision making. Finally, the evaluation between knowledge management and the organizational dimension was also positive, but very low (0.104) and not significant (bilateral sig. = 0.524). This indicates that knowledge management is not significantly related to the structure or functioning of the cooperative. This is due to the lack of integration of knowledge management in the organizational culture of the organization, making it a limiting factor in decision making and in the implementation of organizational changes.

When contrasting the results of this research with international studies, a significant coincidence is observed with the findings of Mochammad et al. (2024) [15], Nava (2021) [16] and Walrave et al. (2024) [30], who emphasize that effective knowledge management is fundamental for driving innovation in companies. In these studies, it is emphasized that an organization's ability to innovate is directly benefited when there are structured systems for the acquisition, organization and application of knowledge.

López et al. (2020) [12] emphasize the importance of aligning the knowledge management strategy with the organizational strategy to foster innovation. This finding complements the results of the research in the organization, where it is suggested that the absence of a formal strategy to integrate knowledge management could be one of the reasons for the low magnitude with innovation. Both studies agree that KM cannot be seen as an isolated process; it must be

intrinsically linked to the company's overall strategy to generate a positive relationship with innovation.

For their part, the results of Paredes et al. (2022) [18] differ markedly from the findings in the organizational research, since, they conclude that effective knowledge transfer and idea generation contribute to improving the quality and competitiveness of firms, in contrast, the organizational research did not find a significant relationship between knowledge management and innovation in most of the dimensions analyzed. This discrepancy can be attributed to several factors. First, differences in samples may have a significant influence, as the research focuses on an organic banana cooperative, which could result in organization-specific characteristics that affect the relationship between knowledge management and innovation. Also, the cultural context in which the studies are conducted may influence how KM is implemented in innovation.

The importance of innovation as a pillar of business competitiveness is highlighted both by García et al. (2021) [7], who emphasize its crucial role in times of crisis, and by research in the organization, which recognizes innovation as fundamental for its future development. Likewise, Tasayco et al. (2023) [23] highlight the adoption of emerging technologies in knowledge management, such that the organization has begun to implement in certain operations, showing interest in technological tools to optimize its processes. Furthermore, Inga et al. (2023) [10] point out how KM generates value in microenterprises, an objective also pursued by the organization when trying to improve the quality of its product. However, there are key differences: Gutiérrez et al. (2022) [9] note the positive impact of the digital economy in companies in northern Lima, an advantage still untapped by the organization, while Fernández et al. (2022) [6] highlight the high valuation of QA in southern Peru, a valuation that in this organization does not yet translate into a strategic application that fosters improvements in innovation, evidencing a gap between theory and practice.

The results of the research on KM and innovation in the organization, which show a low correlation between the two variables, can be analyzed in the light of the theories underlying the research. First, the Theory of the Knowledge-Creating Organization (Nonaka and Takeuchi, 1999) [19]: This theory, cited in the sources as the basis for the knowledge management variable, emphasizes the importance of the interaction between tacit and explicit knowledge for the creation of new knowledge. The low correlation between knowledge management and innovation in the organization suggests that the interaction between these two types of knowledge may be deficient, whereas, the Resources and Capabilities Theory (Penrose, 1959; Barney, 1991) [24]: also used as a foundation for KM, focuses on the importance of a firm's resources and capabilities in achieving sustainable performance. Low correlation between variables in the organization could indicate that it is not efficiently using its knowledge resources to develop innovative capabilities.

In the case of the Theory of Economic Development (Schumpeter, 1911) [20]: Schumpeter argues that innovation is the engine of the capitalist system. This theory, as described in the consultation, highlights the role of the entrepreneur and his pursuit of scientific excellence as drivers of innovation and the evolution of capitalism. The research reveals that the organization's efforts are primarily focused on the production and export of organic bananas. While this is important for the sustainability of the cooperative, a Schumpeterian approach would require the exploration of new market opportunities, innovative products and more efficient processes, aspects that do not seem to be receiving sufficient attention. And finally, the Dual Core Theory (Daft, 1978) [14]: Daft proposes that there are two types of innovation: managerial and technological. In the organization, the low correlation between QA and innovation suggests that the cooperative is implementing administrative and technological innovations in isolation, without an effective connection with QA.

V. CONCLUSIONS

Specific Objective 1 concluded that knowledge management in the organization is not significantly related to the development or improvement of products/services, as reflected in the correlation coefficient 0.180. Although knowledge management practices are being implemented, these do not translate into tangible improvements in their commercialization, this is due to a limited focus on the practical application of knowledge to innovate.

Specific objective 2 concluded that knowledge management is not significantly related to the optimization or improvement of the organization's key operational processes, having a correlation coefficient of 0.110. This suggests that areas such as production, logistics and export management operate independently of knowledge management. Therefore, there is a need to more effectively integrate knowledge management into decision making and process improvement to increase operational efficiency.

Specific objective 3 made it possible to identify that no significant relationship was found between knowledge management and the commercial area of the organization, with a correlation coefficient of -0.062. The data do not show that knowledge management is related to the marketing, sales or positioning strategies of the cooperative in the market.

Specific Objective 4 determined that knowledge management in the organization is not showing a significant relationship with organizational structure or functioning, with a correlation coefficient of 0.104. Knowledge management practices do not appear to be related to organizational decisions or changes, suggesting that the organization could benefit from greater strategic integration of this resource to improve the effectiveness of its internal operations and strengthen its competitiveness.

Finally, the general objective determined that knowledge management in the organization, although recognized as important, is not implemented strategically to promote innovation, yielding a correlation coefficient of 0.155, which denotes its focus mainly on the technical core, prioritizing the basic operations of production and export of organic bananas, and there is no significant relationship between knowledge management and its capacity to innovate. Greater integration of knowledge in decision making and the generation of new ideas is required to improve competitiveness.

VI. RECOMMENDATIONS

It is suggested that research should not be limited to a correlational level, but should explore the causal relationships between knowledge management and innovation. An experimental or quasi-experimental design could be used to determine whether the implementation of specific knowledge management strategies has a direct relationship with the company's innovation capacity. In this sense, explanatory research is key because it allows us to understand not only what happens, but why it happens, this helps to make better predictions and to make informed decisions. Ramos (2020) [21].

It is recommended that the scope of future research be extended to cover other companies. Although the current study, focused on the organization dedicated to the export of organic bananas, offers valuable insights on knowledge management and innovation in this specific sector, the Peruvian industry is rich, diverse and encompasses a wide range of products and business models, so broadening the focus on other objects of study to address new sectors will allow delving into other business realities.

For future research, it is suggested to further explore the integral role of knowledge management, focusing on how its various components contribute to strengthening innovation in companies in the export sector, seeking not only to optimize performance, but also to foster an adaptable and creative environment, this perspective can offer new strategies for the organization to increase its competitive advantage, especially in international markets, by taking better advantage of its intellectual and technological resources.

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