Information Systems and Knowledge Management: The experience of the Cavagro Microenterprise

Sistemas de informação e gestão do conhecimento: A experiência da Microempresa Cavagro

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ABSTRACT
Information systems are a key element in knowledge management, through the processing and consolidation of information, the transfer of knowledge to other members of the organisation is ensured and the necessary tools are made available to carry out the work of collaborators. Having information systems allows you to obtain and process information from customers, suppliers, collaborators and interest groups that allow you to efficiently achieve business results and objectives. This article aims to describe the process of adoption and implementation of information systems in the Cavagro company located in Bogotá Colombia. The text is developed through the information provided by the employer and analysed by the authors of the document over a period of six years, which is the period in which the company has been in operation.

Keywords: Information Systems, Knowledge Management, Organisational Learning, Change Management.

RESUMO
Os sistemas de informação são um elemento fundamental na gestão do conhecimento, pois, por meio do processamento e da consolidação das informações, garante-se a transferência de conhecimento para outros membros da organização e disponibilizam-se as ferramentas necessárias para a realização do trabalho dos colaboradores. A existência de sistemas de informação permite obter e processar informações de clientes, fornecedores, colaboradores e grupos de interesse que possibilitam a obtenção eficiente de resultados e objetivos comerciais. Este artigo tem como objetivo descrever o processo de adoção e implementação de sistemas de informação na empresa Cavagro, localizada em Bogotá, Colômbia. O texto é desenvolvido por meio das informações fornecidas pelo empregador e analisado pelos autores do documento em um período de seis anos, que é o período em que a empresa esteve em operação.

Palavras-chave: Sistemas de informação, Gestão do conhecimento, Aprendizagem organizacional, Gestão de mudanças.
1 INTRODUCTION

Document management, information management and knowledge management and the relationships between them are key elements for the development of productive activities in organisations, the proper use of information systems, the integration of technology nested in the strategic plan of the company, they are essential when it comes to achieving organisational objectives. The correct use of an information system generates competitive advantages and allows the durability of companies.

This article describes the evolution of the information processing of the Cavagro company, the results obtained by the company so far since its constitution. The text unfolds in three parts. The first refers to the conceptualisation of information systems for management, its benefits and the challenges of its implementation, the second describes knowledge management and organisational learning in organisations, and the relationship between these concepts with the strategy of the company, the third narrates the characteristics of the Cavagro company, its strategic plan, and the adoption of the information processing system to improve its production processes, finally the findings found in the implementation of information systems are presented.

2 MANAGEMENT INFORMATION SYSTEMS

Information systems in a globalised world, take on special importance when dealing with large amounts of storage and processing of information of each organisation, from accounting programs, marketing, banking, payroll among other multiple tasks which companies must develop. It is there where the term management becomes a key element for the correct use of information systems that process and store data from customers, suppliers and collaborators. An Information System is understood as a permanent and systematised process of collecting, processing, ordering and distributing the precise information for the objectives of planning, action and business evaluation (Ferrin, and Alcívar, 2021; Anderson, and Dexter S, 2005; Vidal, et al, 2012).

Information systems are of vital importance today because these over the years have become the essential tool for carrying out commercial activities, therefore, they enable the achievement of strategic business objectives (Laudon and Laudon, 2016; Buitrago and Daza, 2022). Consequently, Information Systems help business durability, facilitating the marketing activities of the goods and services that companies offer.

Since 1970, the emergence of a new range of technologies aimed at manipulating and transmitting information has created a completely different panorama in that people have incorporated new capacities as an extension of their nature, to the point of making them essential to live in the world (Gauchi, 2012; Buitrago and Quevedo, 2022). People must adapt and be trained in the use and management of new technologies for information processing, which serve as an input to carry out the functions and processes for which they were hired and that ultimately seek to achieve organisational results and objectives.
It is evident that information technology provides an excellent opportunity to improve the productivity of companies. Specifically, the Information Systems integrate information from business databases, from mobile devices, as well as results of operations and specific information recorded by professionals. Despite this, professionals need to make significant efforts to have the required, global and real-time information that allows an effective and efficient organisation (Claverías et al., 2021; Dvir, et al, 2004). To the extent that organisations, through their collaborators, make adequate use of information systems, they will be able to generate competitive advantages.

With regard to Information Management, a key tool for decision making, it can be said that in the new Information Society in which we live, it is evident the value of Information Management for companies and organisations to have a success factor (Polo, et al, 2020; Fletcher, and Griffiths, 2020). Properly managing, processing and storing it efficiently, is a fundamental process when it comes to generating knowledge, and that is why it is important to have the necessary tools for this and trained personnel that can make the most of the information required for the proper functioning of organisational tasks.

3 KNOWLEDGE MANAGEMENT AND ORGANISATIONAL LEARNING

The pioneer in knowledge management is Etzioni Amitai (1979) at Columbia University, who in his book Modern Organisations, in chapter VIII in relation to administrative authority describes, in his own words, that the most important structural dilemma is the inevitable tension imposed on the organisation by the use of knowledge (Farfán, and Garzón, 2006; Feitosa, and Salas, 2020). All social units, he says, use knowledge, but organisations use more knowledge and in a more systemic way than other social units. Moreover, most knowledge is created in organisations and passed on from generation to generation, meaning that it is preserved by organisations.

Knowledge is one of the most valuable intangible assets at the organisational level; it is the tool that allows collaborators to make use of what they have learned and put it to their own service and benefit and at the disposal of the organisation. When it is possible to process and document the knowledge of individuals, transmit it to a work group and deploy it in the organisation, we are talking about generating knowledge within the company.

The different processes that make up knowledge management change and are modified according to the objectives of the knowledge that needs to be managed and the nature of that need. Organisations that need to retain knowledge or that manage their knowledge on the basis of continuous improvement increase their competitive probabilities in the market (Triana, et al, 2021; Gilstrap, and Hendershot, 2015). Knowledge is an element that can be modified and adapted depending on the particular needs of a sector to get the maximum benefit and use it to achieve the proposed goals through proper management.

The term management would seem to be equated with administration, however, and as
management is currently conceived within the perspective of organisational practices, it is supported by a set of decision-making activities that take place within an organisation and is applied as a set of procedures for the adequacy of resources of any kind to those purposes for which the resources have been obtained. Therefore, to manage is to make decisions be executed, to process matters with a view to obtaining results, it involves the set of theoretical propositions that explain the use of rules, procedures and operating modes to effectively carry out the economic activities that allow achieving the objectives of an organisation (Gauchi, 2012; Larson, and DeChurch, 2020).

It is essential to generate learning environments that allow activities to be carried out properly in order to establish the appropriate routes to achieve the proposed goals. Facing learning and knowledge issues within an organisation is not simple, and even less so when it is an information organisation dedicated to the generation and dissemination of information and knowledge that can be scientific and technological to satisfy social needs, most of them without profit.

In this process there are unresolved complexities or complexities under construction in relation to people, technology, processes, contents and the organisation itself, which hinder and limit the achievement of objectives that are defined in a generalised and sometimes simple way (Stable, 2011; Liu, et al, 2020). It is essential in the learning processes to generate awareness in the collaborators of the advantages of having adequate information adjusted to the needs for each of the functions performed in the organisation.

Organisational learning is a relatively recently developed field of academic research and professional practice. Learning capability is considered and valued as a multidimensional variable in which sources, levels of learning, culture and conditions for learning are representative dimensions. In short, the dynamic interaction between sources, learning levels, culture and conditions for learning, knowledge and the learning processes that develop them determine the learning capacity of organisations, whose effects on organisational results are moderated by knowledge management (Garzón and Fisher, 2008; Michel, et al, 2020).

Organisational learning is a process based on individual learning, through which an entity, whether public or private, large or small, acquires or creates knowledge, with the purpose of adapting to the changing conditions of its environment or transforming it, depending on its level of development (Castañeda and Fernández, 2007b; Pokhrel, and Chhetri, 2021).

Organisational learning is a process that can be facilitated by organisational conditions. That is, the process of knowledge creation and acquisition in an organisation is not a spontaneous or natural process, but requires conditions that promote it. Given the above, learning is supported by four axes: learning culture, training, strategic clarity and organisational support (Castañeda, 2015; Panteli, et al, 2019; Gauchi, 2012).

In recent years, the field of organisational theory has witnessed the emergence of perspectives that propose a shift from conceiving the organisation as a machine to considering it as a living organism,
subject to development and learning phenomena (Schroeder and Montenegro, 2020; Richter, 2020).

Organisations need to have a strategic plan to guide the course of their actions. By having established goals, they can direct their efforts to achieve them. The main objective of strategic management is to achieve and preserve competitive advantage, which is essential for the long-term success of an organisation (Rueda and Acosta, 2015, Anderson, 2008, Sharma, et al, 2019). Kaplan and Norton (2000), proposed four perspectives to achieve strategic objectives in an organisation: financial, customer, internal processes and learning and growth. This last perspective includes everything related to the capabilities of personnel and systems, as well as the delegation of power and the consistency of objectives.

4 INFORMATION MANAGEMENT AND KNOWLEDGE MANAGEMENT AT CAVAGRO

Cavagro SAS, is a company dedicated to providing solutions in agro-industrial cableway transport; they advise, design, produce and install cableway systems in the palm, banana and flower sectors. They supply and commercialise components for the cableway systems: grapples, aerial tractors, nets for fruit transport, among other improvement and maintenance materials. They design the cableway system according to the needs of each customer, and are committed to accompany and advise the customer in the proper use of the systems they offer.

The cableway is an agro-industrial cable transport system, initially and successfully used in banana plantations, this cable transport system became a vital infrastructure for transporting bunches of fresh fruit. After achieving success and positioning itself in the banana sector, the cableway was introduced in the flower sector, currently achieving a coverage of about 30% of the area planted with flowers in the country (Buitrago, 2018). Currently, the cable transport system for the agricultural sector is gaining importance in the palm areas of the country, due to its ease of installation and the benefits achieved for the transport of fruit from the harvesting site to the unloading area and/or extraction plant. Around 30,000 hectares in the country have been covered with the cableway system.

Cavagro is a company incorporated in March 2016, since then it is aware that in a globalised world information and telecommunication technologies ICT, are of vital importance in the productive, commercial, administrative and strategic processes of the organisation.

Within the first approaches to Information Systems, Cavagro adopted the following services:

- Corporate e-mail: This allows official communication and storage of information of its clients, suppliers and collaborators in the Drive. It also allows the use of video conference calls, among other functions.
- Web page https://www.cavagro.com: You are aware that one of the means by which you can generate contacts with suppliers and customers is through the information that you can publish in this portal.

• Purchase orders: Both customer purchase orders and those generated by the company are received and distributed via e-mail.

• Commercial offers: Commercial proposals are sent to customers via e-mail and stored in the corporate drive.

• Banks: The company's banking management processes are managed through the bank's platform where the corporate account is held; check deposits and transfers for payment of services are received through this portal, as well as payments to suppliers and collaborators.

• Invoicing processes: In 2020 the company ventures into electronic invoicing, a process that allows it to have systematised all its customers and immediately deliver their invoicing.

At present the company has 25 workers distributed in the projects under execution, the linking and processing of information related to social security is processed through the different portals of the Health Care Providers EPS, Affiliation to the Pension Fund, AFP, Occupational Risk Insurance Company, ARL and Family Compensation Funds, CCF, the occupational health and safety system is contained in the ARL platform.

Figure 1. Cavagro Information System Model

Source: Cavagro Strategic Plan 2021
5 PORTER'S 5 FORCES ANALYSIS:

Threat of substitute products or new products:

The negotiating capacity in this aspect of the organisation is determined by being in a market with few suppliers that can provide new products and services of this nature such as marketing, consulting, design, production and installation of agro-industrial transport systems by cable way for the palm, banana and flower sector; which allows having a great opportunity for negotiation due to the same restrictions of a business that is in a blue sea.

Threat of new entrants or competitors in the industry

The negotiating capacity in this aspect of the organisation is determined by the fact that it is in a market with few suppliers that can enter the marketing, consulting, design, production, and installation of agro-industrial cableway transportation systems for the palm, banana, and flower sectors; this means that the lesser the competition, the higher the negotiating capacity.

Rivalry among competitors

The negotiation capacity in this aspect of the organisation is determined by being in a market with few suppliers, but it is a market with high rivalry and few customers, and despite having a diverse portfolio, there are few customers, which makes a sea of red in the market.

The bargaining power of suppliers

The bargaining power in this aspect of the organisation is determined by being in a market where there is a mass supply of inputs and services, which means that the greater the supply of suppliers, the greater the bargaining power.

Customers' bargaining power

The bargaining power in this aspect of the organisation is determined by being in a market with few suppliers, where there is a monopoly of competitors and Cavagro SAS is not in this perspective and its customer sector is limited, which means that the fewer customers, the lower the bargaining power.

Some of the aspects to be taken into account to guarantee the permanence of the company in the future are the following:

- Timely follow-up with prospective clients in the banana and palm sectors, commercial visits, and attention to clients' needs, with the aim of attracting clients in these sectors.

- With CAVAGRO competitive advantage in the Bogotá savanna, sales and the number of clients in the floriculture sector can be increased.

- The company's knowledge of the palm and flower sectors will enable it to approach suppliers
and/or distributors to increase the value chain for its clients.

- With good relations in the palm sector and timely attention, the company can increase its participation in the palm sector and thus not depend on sales in the flower sector.

- By providing timely attention and building customer loyalty, it ensures that customers prefer the company's services.

6 VALUE CHAIN MATRIX

**Primary activities:** these are the processes involved in the manufacturing of the products and delivery of the goods to the final consumer.

- Internal logistics: raw materials are shipped to the customer's address and the manufacturing process is carried out at the point of installation.
- Operations: the transformation process is carried out directly at the point of installation of the project.
- External Logistics: The orders placed by the customer are stored in databases, ordered from suppliers and shipped directly to the customer.
- Marketing and Sales: The marketing process is carried out through the website and social networks. Commercial offers are made after the customer's visit, the commercial proposal is made, and depending on the negotiation, a service order or contract is signed to proceed with the manufacture and installation of the cableway system.
- Service: The warranty support is offered by the company; maintenance service and training of the cableway system is offered.

**Support activities:** all the processes associated with the production processes and that help in the management of the aforementioned processes.

- Infrastructure of the organisation: planning, accounting and finance processes, in charge of keeping the company healthy with the obligations of suppliers, state and collaborators.
- Human resources management: Welfare, recruitment and training aspects.
- Technology development, research and development: raw materials aspects are reviewed to reduce costs and durability of products.
- Purchasing: permanently checks prices of raw materials, shipping costs, transportation and distribution.
7 CHARACTERISATION OF THE TRANSFORMATION POTENTIAL IN CAVAGRO

After applying the transformation potential characterisation instrument to the organisation's managers, it was possible to establish the following most used characteristics according to the following table.

Table 1. Characterisation of the potential for organisational transformation.

<table>
<thead>
<tr>
<th>No</th>
<th>Factors</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The company uses information systems</td>
<td>5,0</td>
</tr>
<tr>
<td>2</td>
<td>The company uses technology</td>
<td>4,2</td>
</tr>
<tr>
<td>3</td>
<td>The type of technology used by the company</td>
<td>2,7</td>
</tr>
<tr>
<td>4</td>
<td>The importance of knowledge management in the company is evident</td>
<td>4,6</td>
</tr>
<tr>
<td>5</td>
<td>The company monitors and analyses the sector's performance</td>
<td>2,4</td>
</tr>
<tr>
<td>6</td>
<td>The company applies the information obtained from the monitoring of the sector</td>
<td>2,9</td>
</tr>
<tr>
<td>7</td>
<td>The sources of technological knowledge consulted by the company</td>
<td>3,6</td>
</tr>
<tr>
<td>8</td>
<td>The organisation adapts knowledge to its needs by</td>
<td>3,4</td>
</tr>
<tr>
<td>9</td>
<td>The integration of knowledge mastered by the company to organisational actions and activities is evidenced</td>
<td>4,0</td>
</tr>
<tr>
<td>10</td>
<td>The company produces associated knowledge</td>
<td>4,0</td>
</tr>
<tr>
<td>11</td>
<td>The company creates new knowledge</td>
<td>2,8</td>
</tr>
<tr>
<td>12</td>
<td>The company uses technology in knowledge management</td>
<td>4,6</td>
</tr>
<tr>
<td>13</td>
<td>The company manages the information at its disposal</td>
<td>1,0</td>
</tr>
<tr>
<td>14</td>
<td>Among the information gathering techniques, information processing and analysis tools are used in the company.</td>
<td>1,8</td>
</tr>
<tr>
<td>15</td>
<td>The company's information systems</td>
<td>2,3</td>
</tr>
<tr>
<td>16</td>
<td>The company obtains internal information</td>
<td>3,0</td>
</tr>
<tr>
<td>17</td>
<td>The resources used for information gathering</td>
<td>2,8</td>
</tr>
<tr>
<td>18</td>
<td>The media is used in the company</td>
<td>3,0</td>
</tr>
<tr>
<td>19</td>
<td>The company obtains external information</td>
<td>4,2</td>
</tr>
<tr>
<td>20</td>
<td>What sources of information are consulted or accessed by the company.</td>
<td>3,8</td>
</tr>
<tr>
<td>21</td>
<td>Regarding the company's website</td>
<td>5,0</td>
</tr>
<tr>
<td>22</td>
<td>The sources used by the company for the design of an information system</td>
<td>3,6</td>
</tr>
<tr>
<td>23</td>
<td>For the implementation of a new information system the company</td>
<td>2,6</td>
</tr>
<tr>
<td>24</td>
<td>Collaboration, cooperation and teamwork are supported.</td>
<td>2,5</td>
</tr>
</tbody>
</table>


- The company uses information systems to optimise the organisation's decision-making processes, support the business activity, support the management of the organisation, facilitate the operation of the company, and generate strategies to face the actions of the competition.

- It uses technology to generate sustainable competitive advantages, to support decision-making processes, to reduce operational costs, to facilitate interaction with customers and consumers, to optimise business efficiency and to support organisational management.

- The type of technology used by the company are proven and mature technologies.

- The importance of knowledge management in the company is evidenced in: The organisation's
mission statement, the business vision postulates, the principles and values that the company proclaims, the business strategies, the company's actions, the organisational processes and the competencies that the company masters.

- The company monitors and analyses the behavior of the sector through: Exploration of opportunities and needs in the market, and comparison of practices of different companies in the sector.

- The company applies the information obtained from monitoring the sector to: Updating and acquiring new technologies, adapting existing technology in the organisation, developing new technologies and improving the company's management systems.

- The company uses technology in knowledge management for: The structuring and storage of available knowledge, the dissemination of knowledge, the sharing of new knowledge, the acquisition and appropriation of new knowledge, the application and transfer of new knowledge.

- The integration of knowledge mastered by the company to organisational actions and activities is evidenced in: Acquisition of new technology, design and implementation of new processes, modification of the company's business model, design of new products and services in the company, modification of the company's products and services, improvement of the organisation's production processes, and the transformation of the company's organisational structures.

8 IMPROVEMENT PROPOSALS AND RECOMMENDATIONS

Among the improvement actions for Cavagro to improve its information systems in order to improve its competitive advantages, the following are proposed:

- Implement marketing 2.0 according to owners' expertise that is highly recognised.
- Develop market studies through the information systems of the sector.
- Participate in sector fairs and benchmarking of new businesses and chain.
- Link interns or trainees to develop their own information systems according to the needs of the owner and clients.
- Use information systems for collaborative work.
- Document and systematise procedures in installation and service manuals in order to have the information digitised.

9 DISCUSSION

Information systems and knowledge management in Cavagro have been present since its inception, the organisation is aware that it must incorporate into its strategic and tactical processes technological tools that help in the efficiency of its functional processes.

It is clear that within the organisation's knowledge management processes, in its processes of installation and final delivery of the product, the learning of its collaborators is essential to deliver a
product with the characteristics offered and that meets the client's expectations. Organisational learning within Cavagro is one of the greatest resources, through which new collaborators acquire the necessary knowledge and techniques to carry out the correct installation of cableway systems.

Supported by the organisation's information systems, processing, marketing and installation times can be met, as well as the corresponding labor and supplier payments.

Cavagro most valuable asset is its knowledge of the design and installation of cableway systems for the sectors it serves; few companies in the market offer this type of product, which is why by systematising its processes, using technological systems and making them available to the functional areas of the organisation, it is possible to achieve the proposed goals.

Cavagro does not invest heavily in information systems, but makes use of the tools available to it, such as its supplier's accounting packages, the DIAN billing system, its bank's virtual branch, the digital platform of its ARL and compensation fund, all of which are technological tools that enable it to perform its operational functions. At a strategic level, you use e-mail services that allow you to store information and distribute it to your customers. The website is also a tool that allows you to be visible to your future customers who can find through them the contacts to acquire the services offered.

10 CONCLUSIONS

It can be seen from Cavagro in its information systems model that all the technological resources it uses are transversal and fulfill the purpose of ensuring the timely delivery of goods and services that the company offers, likewise it is observed that although its organisational structure is light, around it revolves the information systems that allow the development of all its administrative and operational functions that allow the development of the activities of the collaborators.

Finally, in the analysis of the information and knowledge management systems of this company, it can be inferred that regardless of the size of the organisation, they play a fundamental role in managing and processing the information that flows in all the processes that are developed to deliver a product that satisfies the needs of the consumer.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.
REFERENCES


Rueda Fierro, I. y Acosta Andino, B. (2016) Relación entre plan estratégico y el aprendizaje organizacional como elemento de la gestión del conocimiento en las instituciones de educación superior. *Economía y Negocios* 7(1) 84-95 https://doi.org/10.29019/eyn.v7i1.254
