

# MEANS AND MECHANISMS OF INFORMATION AND COMMUNICATION IN KNOWLEDGE MANAGEMENT IN ORGANIZATIONS

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**Abstract:** *Knowledge management in organizations is an issue that has been strengthened from the realization of processes in support of digital and traditional tools. The result of the study that sought to know the availability of information and communication technologies in knowledge management in Bogota companies is presented here. The investigation had as informants 386 officials of public and private companies, to whom an instrument was applied. Among the results, it was obtained that the level at which electronic media for CG and traditional mechanisms for CG are found is high at 77.5% and 57.3% respectively, 21.2% and 40.9% average, as well as, for two variables, low by 1.3% and 1.8%. The relationship between ICT and knowledge management is positive and strong.*

**Keyboard:** *Knowledge management, information and communication technologies, Bogota.*

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## 1. Introduction

The growing and accelerated advance of the environment means that companies have to face changes and transformations to adapt, use and correctly manage knowledge so that organizational goals are achieved in a timely manner (Chawan & Vasudevan, 2013). That is why Knowledge Management (KM) is considered a strategy that seeks to transfer knowledge from the place where it is generated to the place where it will be used (Cobos, 2020), with a committed human capital that works on the development of its competencies to process organizational knowledge through acquisition, storage, transformation, distribution and use of the same, in order to generate competitive advantages, enhance intangible assets and be a transmitter of a culture of exchange (Maravilhas & Martins, 2019) within the company. Thus, the ability to use knowledge plays an important role in the future of all types of companies, to improve business decisions and organizational performance (Valdéz, 2017). In this sense, QM is a resource that allows not only to interpret the dynamics of the organizational environment, but also provides the option of using this information to act and take actions in favor of their own evolutions; in this way, appropriate knowledge as a tool for their particular benefit, as far as economic, social and human development is concerned (Quintanilla, 2015). From this, it is sought that the company learns to use the information available in all organizational processes to strengthen its productivity, innovation and the skills of workers (Rodríguez, 2015). In the line of making good use of information, Ponjuán (2015) considers that every institution must declare policies related to the digital or physical treatment of the use of documents, storage,

among other variables linked to the management of organizational knowledge, because according to this author, without policies there are no strategies and, therefore, there is no information management.

## 2. Literature review

The application of ICT in the QA of companies has been a topic of relevance, as they are considered determining elements in organizational growth and development, as evidenced by Valdez, et al. (2017) in their study made up of a sample of 903 companies in the region of Murcia, Spain, where they sought to analyze the influence that ICT has on KM and, in turn, the effects of these two variables on business growth. The findings indicated that the use of ICT has a positive and significant influence on KM processes and organizational growth. Valdez (2017), also conducted an empirical analysis in the Northwest Region of Mexico with a sample of 412 SMEs about innovation and their performance, as well as the importance of KM practices on innovation and IP management (intellectual property). And, the effect of innovation and IP management on the performance of SMEs. The results prove that ICT, QA and knowledge acquisition (internal and external), are excellent strategies and means to achieve high levels of innovation. In addition, ICT and innovation exert a positive and significant influence on financial profitability, customer satisfaction and human resource satisfaction.

Finally, no empirical evidence was found on the relationship between innovation, intellectual property and its impact on SME profitability. In Colombia, the use of ICT and its relationship with Knowledge Management in 117 small and medium-sized enterprises in Valle del Cauca was also analyzed (Cortes and Messa, 2018). The results reveal that workers accept positively the use of technology and see in the different tools it offers, instruments that allow them to be at the forefront and obtain better results increasing income, productivity and stability in the market.

## 3. Theoretical framework

### *Knowledge Management in companies.*

Knowledge, according to Sefollahi (2018), is information in cognitive forms such as understanding, awareness and capacity that is acquired through the consumption of information, experimentation and thought processes, such as imagination and critical thinking. In the organizational context, knowledge is considered the main sustenance and one of the most important intangible assets of business activity, as it is a means of optimizing the productive processes of companies and countries (Bom et al., 2018). Individual knowledge produces substantial benefits to the company, to the extent that one becomes a potential factor of change in the forms of development of organizations; and two, in objective of production and economic exploitation, in order to innovate and continuously maintain positions of advantage in the market and thus, improve economic performance (Muñoz, 1999). Within this framework, the acquisition, transfer and use of knowledge that is generated inside and outside the organization, are linked to QM, which according to Espinoza (2018), is the set of processes and actions of detection, selection, organization, filtering and use of the information of the actors of an organization. On the other hand, Vidal & Araña (2012) define KM as the process by which an organization uses its collective intelligence to achieve strategic objectives. Based on the above, QA is mainly linked to the human capital linked to the organization, who acquire and share information based on their training and the strategic objectives of the company.

### *ICT in organizations*

Information and communication technologies (ICT) are management computer resources with functionalities and business applications, which favor and facilitate the transfer, use of knowledge, training and training of human capital, among others, through tools such as: intranet, email, computers, business software, spreadsheets, data storage and network, etc. (Barta, 2021). These and other types of technological infrastructure are instruments that are adopted, appropriately according to needs, in business practices through declared policies and strategies, in order to help regulate: knowledge; the protection of electronic documents, patents, formulas and inventions (Erden et al., 2014); the relationship with customers; information on competition; search for new markets (Spagnol, 2015) and the management of workers to generate and maintain competitiveness in the market.

In this same line, it is stated that the definition and application of ICT policies in the tasks of the company, allow to improve the actions and knowledge that individuals have about their processes. In this way, it is possible to analyze and feedback the productivity of each employee (González, 2020) which in turn has an impact on organizational competitiveness, given that internal and external processes of the organization are strengthened by the existence of efficient technological infrastructure and a strong organizational culture with respect to the application of ICT based on the definition of strategies and guidelines that help protect knowledge through protection and coding policies, regulate people's behavior and establish decision-making systems (Allameh & Abbas, 2011), in order to improve some business practices and gain a competitive advantage (Ceci et al., 2015).

*Relationship between QA and ICT in organizations*

Likewise, other authors have indicated that organizational knowledge supported by ICT helps to develop e-commerce activities more quickly and have a greater presence in different regions through the Web (Günsel, 2015; Wang & Yang, 2016). On the other hand, some studies suggest that ICTs enhance the skills of human resources (Maier, 2013; Palacios et al., 2015) improve learning, and facilitate the development of their skills, which has an impact on greater preparation of staff to innovate and support organizational growth (Vivarelli et al., 2013; Hatzikian and Bampasis, 2015). In this sense, technologies and the flow of organizational information become a duo that promotes knowledge management through access and use of technological resources in all areas of the organization (Aparici, 2010). Excellent measure if the benefits in training and development for employees and the company are analyzed in prospective, which would be reflected in greater competitiveness, if the resources are used correctly and if they are aimed at strengthening the fulfillment of the objectives (Rodríguez, 2015).

In short, ICT is an ally for the actors of the organization, since these tools in themselves are not knowledge management, but instruments that allow talent to train and enhance their skills and knowledge in order to put into practice what they know for the creation and dissemination of knowledge, so that companies take advantage of the knowledge developed and obtained by human capital, and improve organizational efficiency (Alcoceba, 2012). These digital transformation processes that companies adopt according to their needs, require the commitment of the institution and its employees in compliance with processes, policies, rules and in the development of a culture where the actions of sharing and collaborating are a priority throughout the knowledge management program with a view to improving the probability of facing changes and crises that bring changes in the environment (Peñaranda, 2020).

#### 4. Methodology

It is a quantitative research of a descriptive type where the business environment is examined at a given time; according to Cajavilca (2007), this level of depth lies in collecting information from a phenomenon to obtain an updated knowledge of it. Two dimensions are worked: availability of ICT in the organization and ICT in Knowledge Management. Each with two variables occupying 15 items. The feasibility and consistency are a function of what is thrown by Cronbach's Alpha: for the dimension in general it is 0.822; for the electronic means variable for CG is 0.823; for the second variable, traditional mechanisms for CG is 0.715, which reports to be a consistent and reliable instrument (George & Mallery, 2003). A questionnaire designed from the literature review, in Likert scale format, was considered for the collection of information. In this way, it can be affirmed that there were a series of questions around one or more variables that were thought according to the achievement of the proposed objectives (Baena, 2017). The research units were 386 companies. Population made up of public and private organizations: small, medium and large. The procedure begins with the literature review; the instrument is applied using the Google forms tool; reliability is validated from the sample; it is systematized through the SPSS statistical base; and, systematization and preparation of reports is made. Data collection is a process that began in the first half of 2020. The respective intervals are established from the supported baremación of the method of minimums and maximums, where the dimension according to its number of reactants allowed the knowledge of the low, medium and high levels, as shown in table 1:

Table 1.

*List of incidence levels in the variables studied*

Item	Variable	Low	Middle	High
6	Electronic media for CG	6 - 14	15 - 23	24- 30
6	Traditional mechanisms for KM	6 - 14	15 - 23	24- 30

*Note.* Data resulting from the baremación process from the measurement needs of the variables.

## 5. Results

The population worked shows the following characteristics: in order 88.1%, 6% and 6% are private, public and mixed. Likewise, 46.4% are large companies, the rest are between medium, small and microenterprise with 24.1%, 11.1% and 17.6% respectively. 77.5% have more than 16 years of operation, 15% over 6.

## 6. Availability of ICT in the organization

The incorporation of digital and traditional technologies in companies is estimated as a resource that strengthens competitiveness through greater productivity, efficiency and return on investment (Buenrostro, 2019); However, its effect depends on the internal capabilities of the organization, its own electronic characteristics and means, as well as the conditions of the environment for the development of new modalities of knowledge management.

Those who gave information from their perceptions of the realities in the organization against the variable electronic media for knowledge management - GC, realize that for the company the use of these is considered as a key tool for access to information that strengthens their business, since on average 87.3% agree. Likewise, there seems to be a lack of knowledge on the part of 10.1% on the subject treated; On the same path, on average 2.3% do not share it.

Table 2.

*Variable: Electronic media for CG*

Option	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
T/ disagree	2,3%	1,0%	3,9%	1,3%	1,6%	4,4%
Disagree	0,3%	6,2%	9,6%	7,8%	6,5%	10,4%
It-It's	10,1%	1,3%	1,8%	2,6%	2,1%	1,8%
I agree	39,1%	31,6%	44,3%	38,6%	49,2%	43,5%
T/ Agree	48,2%	59,8%	40,4%	49,7%	40,7%	39,9%

*Note.* Own elaboration (2022), based on data from the instrument applied.

On the other hand, at least 84.7% of employees share and accept that in the company electronic means are essential for the capture and storage of information, an important factor for their business; Of this proportion, on average, 45% report strongly agreeing. Likewise, it was found that for 90.1% the company performs procedures in electronic media with which it allows documenting the protocols and / or manuals.

What was communicated against the fact that in the company it is important that the updating of information in electronic media related to databases is permanent, the approval is also broad taking as a reference that 82.7% agree. Of this percentage, on average, 46% report strongly agreeing; 17.3% are undecided or have little knowledge about it. 90.4% of respondents report that the company has electronic resources that allow information and communication of important documents such as reports, reports, policies of its business. Indecision regarding this item is low considering that it is 1.6%, while 16.3% consider not agreeing.

Faced with the fact that in the company there is ease and minimal impediments to access electronic media with information repositories, through some type of internal computer network, such as intranet, at least 79.9% agree; Of the other 19.9% on average, 1.8% are undecided, 14.8% disagree and 3.6% definitely do not.

### Traditional mechanisms for KM

The response is overwhelming to the fact that the organization teaches induction courses in spaces of the company so that the staff knows about: the workplace, job, their colleagues, as well as everything related to the organization; It was found that at least 91.4% conceive of agreeing while 7.2% state the opposite. With regard to the fact that, if it is usual to prepare written documents for the creation of repositories of information considered valuable for the organization, the respondents agree that this happens in 38.6% and with a resounding definitively agree 49.7%; There remains a significant gap in those who disagree and the undecided of 11.3%.

Compared to the daily practice for the preparation of reports and reports on processes in non-electronic mechanisms, 39.9% report strongly agreeing and 43.5% agree. Based on the variable focused on the discernment of traditional mechanisms to manage knowledge in organizations such as the communication tools used until before the appearance of the Internet, it was found that 48.7% and 40.7% agree and totally agree, that the company has available non-electronic resources with relevant information for the work of the different collaborators such as: paper, videos, audios; In this way, 10.5% define not feeling or doubting that this will happen.

**Table 3.**  
*Variable: Traditional mechanisms for CG*

Option	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12
T/ disagree	1,6%	3,1%	2,3%	3,6%	1,6%	8,0%
Disagree	8,3%	13,2%	5,7%	14,8%	9,6%	27,2%
It-It's	0,8%	1,0%	1,6%	1,8%	1,6%	2,1%
I agree	48,7%	47,2%	52,6%	47,2%	49,7%	40,4%
T/ Agree	40,7%	35,5%	37,8%	32,6%	37,6%	22,3%

*Note.* Own elaboration (2022), based on applied instrument data.

At least 84.9% perceive that the company uses non-electronic or traditional information and communication technologies to serve its customers in relation to their opinions, suggestions, needs and complaints, it is important to note that 15% account for ignorance.

Likewise, 65% of respondents corroborate that the company in its organizational communication makes use of traditional mechanisms for notifications. The rest, 0.8% do not specify; Meanwhile, 34.3% say they do not agree with the use of such traditional mechanisms for communication.

**Table 4.**  
*Level per variable*

Level	V1	V2	T General
Low	1,3%	1,8%	0,5%
Middle	21,2%	40,9%	25,9%
High	77,5%	57,3%	73,6%

*Note:* V1: Electronic mechanisms for CG. V2: Traditional mechanisms for CG.

From the perception of the informants it was found against the level in which they are, in terms of Electronic media for CG and traditional mechanisms for CG, it is high at 77.5% and 57.3% respectively, 21.2% and 40.9% average, as well as, for two variables, low at 1.3% and 1.8%.

Due to the size of the sample, Pearson's R test was worked in order to establish the relationships between the variables studied, for which it was obtained that, in front of the variables and characteristics of the companies, a direct and moderate positive correlation is shown with the variables between them, this taking into account that the Pearson Coefficient between them is between 470\*\*.

Table 5.

*Pearson correlations between variables and characteristics of firms.*

			V1_	V2_	Type of Company	Company size	Age of the company
V1	C. de 1		,470**	0,054	,277**	,167**	
	Pearson Sig. (bilateral)		0,000	0,287	0,000	0,001	
V2	C. de ,470**	1	0,065	,179**	0,070		
	Pearson Sig. (bilateral)	0,000	0,204	0,000	0,169		
Type of company	C. de 0,054	0,065	1	0,079	-0,034		
	Pearson Sig. (bilateral)	0,287	0,204	0,122	0,508		
Company size	C. de ,277**	,179**	0,079	1	,319**		
	Pearson Sig. (bilateral)	0,000	0,000	0,122	0,000		
Age of the company	C. de ,167**	0,070	-0,034	,319**	1		
	Pearson Sig. (bilateral)	0,001	0,169	0,508	0,000		

\*\*. The correlation is significant at level 0.01 (bilateral).

Note: V1: Electronic media for CG. V2: Traditional mechanisms for CG.

Regarding the correlation of the variables against the type, size and age of the company, the following was found: Electronic media for CG ,054, ,277\*\* and ,177\*\* with this suggesting that there is no correlation and weak correlation, respectively. For traditional mechanisms for QA there is a relationship, but weak for the size of the company: ,179\*\* and with the other two it is non-existent. Thus, although the associations are low and moderate, it can be thought that none of the observed variables is independent. Similarly, it is made clear that the existence of correlation between the variables does not mean that there is causation.

Table 6 allows us to report the existence of the positive, strong and direct relationship between the general dimension and the variables: Electronic media for CG. and Traditional mechanisms for CG with a Pearson correlation of .727\*\* and .681\*\* respectively.

Table 6.

*Correlations between General dimension and variables*

		D	V1	V2
D	Pearson correlation	1	,727**	,681**
	Sig. (bilateral)		0,000	0,000
N		386	386	386

\*\*. The correlation is significant at level 0.01 (bilateral).

Note: D: General dimension, V1: Electronic media for QM.

V2: Traditional mechanisms for CG.

In this way it follows that none of the variables is independent, maximum that in some there are low or non-existent relationships, as well as that the knowledge management for the sample



worked is at a considerable high level with what can be thought that they have an important contribution to the competitiveness of these.

## 7. Conclusions

Once the results were analyzed, the following conclusions were reached:


In culture in the use of ICT in the organization, the data for the variable electronic means for QA concluded that: 1) For companies, the use of digital tools is key to access information in order to strengthen the business; 2) ICTs are an ally for companies in terms of employee training, as they recognize that they use them to transmit information about the organization to related personnel; 3) the collection and storage of information in the company is usually done through electronic means; 4) companies still produce reports and reports on processes in non-electronic mechanisms; 5) As a consequence of the above, it is also common to find repositories of information with written documents.

Regarding the variable traditional mechanisms for QA, the data revealed that: 1) although companies have electronic resources that allow information to be stored, some still have relevant data available in non-digital resources; 2) organizations hold periodic feedback meetings on activities for the acquisition, incorporation and optimization of knowledge; 3) Companies allow the exchange of experiences and good practices based on the resolution of problems experienced by employees in their work in the workplace.

To delve a little deeper into the analysis, relevant evidence is indicated on the influence of ICT on KM processes. First, the most relevant result found in the study is that the use of ICTs significantly influences the transfer of information to workers through on-the-job training and institutional philosophy, results that are aligned with the literature (Kahraman & Bozbura, 2007; Gutierrez and Cifuentes, 2017). The studies analyzed specify that the use of ICT is decisive for organizational learning, since it involves all the actors of the organization as it is a dynamic process that seeks to improve the skills of human capital (Castañeda, 2015; Rao, 2012).

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