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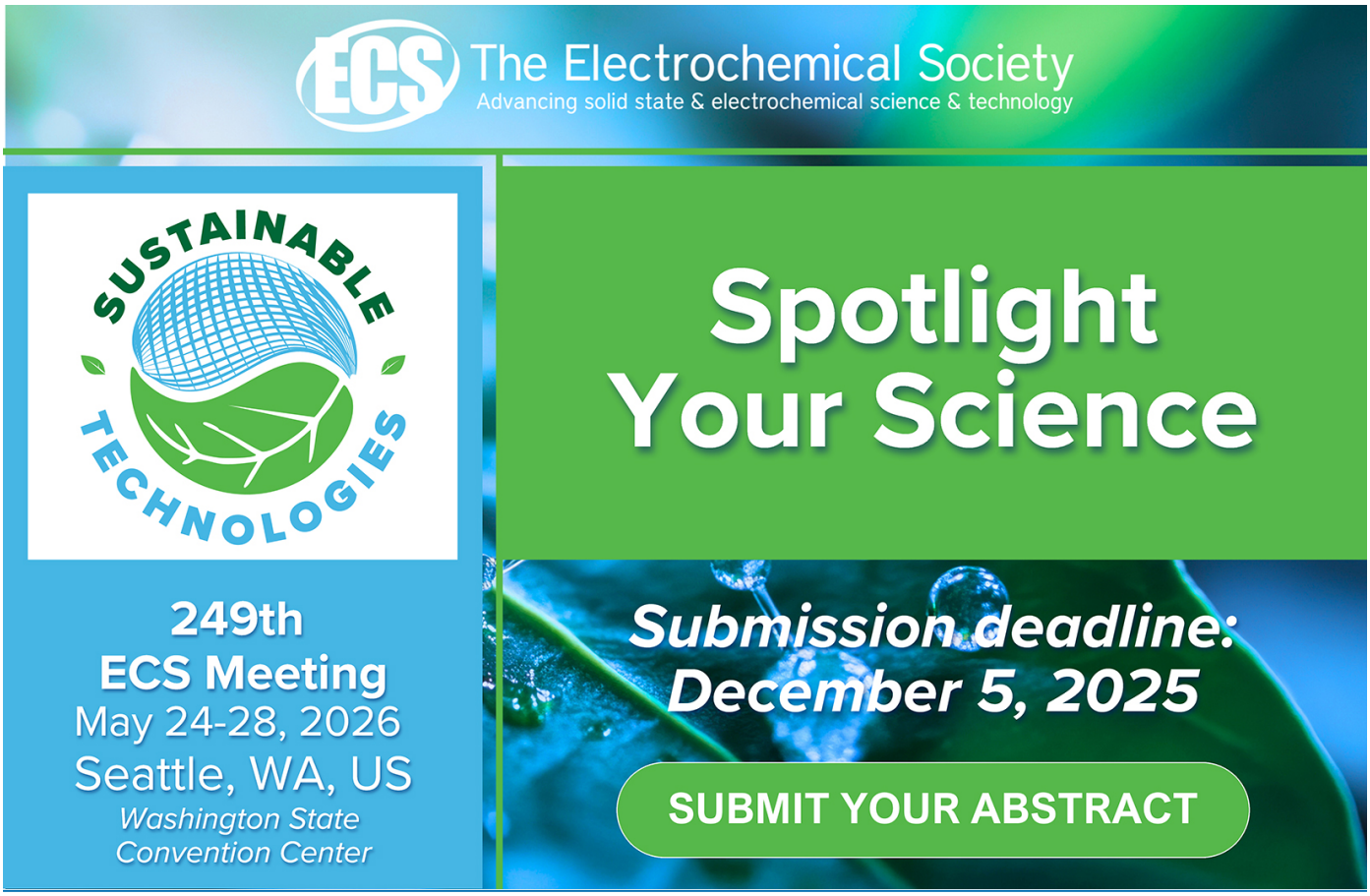
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To cite this article: C A Pacheco *et al* 2020 *J. Phys.: Conf. Ser.* **1513** 012017

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Advance in the computational tools that support the cooperative sector in Colombia

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Abstract. The technological evolution in the 21st century allows organizations to define flexible and integral processes and information systems that guarantee their competitiveness and sustainability. The dynamics of the cooperative sector seeks to use, merge and implement new technological components, aimed mainly at strengthening its business model. The descriptive quantitative research achieves an approach with seven cooperatives (savings and credit) of the Catatumbo Region, Colombia, through the survey technique in order to determine the adaptation of cooperatives in the global panorama of information and communication technologies. In conclusion, the managers of savings and credit cooperatives require technologies to support administrative and strategic operations, as well as contribute to the design and implementation of software to ensure quality, security and effectiveness of institutional information and services to all their stakeholders, prioritizing in contributing to closing the digital divide and social inequality.

1. Introduction

The third solidarity entities, especially the cooperative sector, face the strongest technological changes in recent years, therefore, all its internal and external dimensions require independently of their cycle and productivity a re-engineering process, where it adopts technology management strategies focused on ensuring flexibility and mark leadership with added value, the reason for the above is justified in what, cooperatives must through associativity build business units that not only present a value proposition but generate a transformation in their group of associates through the combination of principles, values, pillars and ends concentrated in the permanent search for collective welfare [1].

In every organization, administrative, financial, operational processes, among others, have been gradually transformed by means of computer systems and tools, facilitating their execution and interaction with national and international contexts, which has allowed to extrapolate new management tactics that respond quickly to the expectations of users or associates in different circumstances, However, even though in Colombia information and communication technologies (ICT) have as their central axis the generation of regulatory and training frameworks consistent with the reality of digital convergence, lowering competition barriers and encouraging investment by companies so that users can have access to more and better services on a permanent basis [2], However, there is a large digital divide in local scenarios, where the challenge for many lies primarily in implementing current digital practices and then being able to access and navigate easily and safely to cybernetics, nanotechnology and future

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virtual communities accordingly, It is argued that information and communication technologies are neither sufficient nor essential for human development to take place, but it becomes urgent to channel them so that they assume a social role in the service of development of the peoples and, above all, of the most needy sectors, a situation that prevails in the country's municipal territories, remembering that the digital divide today threatens to increase social gaps [3].

In this order of ideas, ICT within the cooperative sector require the direction of highly competitive strategies and actions to be able to offer better attention and more technological education according to the needs of the direct and indirect stakeholders and the advances that each one presents in relation to their computer systems, strengthening democracy, transparency and honesty, cooperation, responsibility and mutual help from different domains or networks, all of this through technological management as it is coupled with a characterized administrative process that facilitates activities related to the adaptation, assessment, development, acquisition, transfer and implementation of the various specialized advances that can give an advantage to any type of organization [4].

Finally, the incorporation, evolution and innovation of information technologies within this sector depends on the policies and interests promoted by the first level executive or manager, however, the specific challenge of them, is to be part of the new digital management "cybergerencia" where its main function is to automate and execute all administrative processes virtually, as well as promote collective operations with the internal and external client of the entity through software to ensure sustainability, effectiveness and business integrity over time.

2. Theoretic frame

In this phase, it is clear that the approaches to technology are part of the so-called information society; when analyzing the theory of information is induced that the fundamental objective is to deepen, orient and situate knowledge around communication, with clear and comprehensive strategies, in fact, it adopts the theorization of cybernetics and its influence on communication literacy, thus generating new interests and new adaptations to the medium of communication and digital information [5].

The theory of technological innovation from different literatures recognizes three main approaches, the approach coming from economics, supported by the theories of technological change understanding the concept of innovation when the introduction of the invention is valued as effective, thanks to the discovery and application of results through scientific knowledge, therefore, the theory allows orienting processes according to their origin and incidence.

On the other hand, the managerial approach (management) is found when innovation results in optimizing the functions of business management and characterizing the role of man according to his capacity to combine institutional factors with his role, assuming the corresponding risks, finally, the approach coming from other social disciplines in the meta-economic framework, comprising from sociology, epistemology, among others, the input of knowledge strengthening the innovation more development (I+D) in companies without modifying technological alterations [6].

From another perspective, to analyze ICT in organizational topics, the information system enterprise resource planning (ERP) is a set of interrelated components that process, store and distribute information to support decision making and control in an organization. Likewise, with the support of these models, managers and workers can analyze problems and even create new products. However, for an information system to support the company's decision making, it is necessary for them to perform the activities of data entry or capture, processing, output and feedback [7].

Finally, all right then all to predecessors of the block chain technology submitted that existing information system designs in that it interferes with four characteristics: decentralization, security, adaptability and intelligent execution. On the other hand, explain that it is a distributed database of shared public/private records of all the digital events that are executed among the agents participating in the chain of blocks cited in [8].

3. Methodology

Descriptive level research allows the characterization of an event, phenomenon, individual or group, in order to establish its structure or behavior [9]. The quantitative method was used to determine the types of information technology applied in seven (7) cooperatives specializing in savings and credit, according to data provided by the "Camara de Comercio de Ocaña, Colombia" report to 2019; georeferenced entities in the locality and the surrounding municipalities "La Playa, Teoroma, Gonzales and El Carmen, Colombia". The study also identifies the operations or computer and technological practices carried out by the managers of these entities. Finally, to achieve the presentation and obtaining of results, the research applied the technique of the survey and direct observation.

Finally, to achieve the presentation and obtaining of results, the research applied the technique of the survey structured by three (3) categories that they define: (a) the systems (software) executed for the different functional areas; (b) equipment holdings and (c) The technological operations carried out or implemented by the managers in their managerial exercise. The instrument also formulates 38 closed questions of a dichotomous type and with the Likert scale to measure the frequency of technological use according to processes.

4. Results and discussions

ICT allow entities to break the most archaic and dominant paradigms of their entire organizational structure, but their impact is easily examined by the access and imposition of different resources. In this way, the following results are presented that support the conditions of the cooperative sector in relation to the application of information technology (IT) in all its functionality and in the role of managers.

When observing the data in the Figure 1, it is determined that 100% of the managers of the cooperatives systematize administrative and strategic operations with the use of Microsoft Office tools, likewise, 83% of the directors of the sector acquire new knowledge through e-learning, due to the times and the facility that have the applications or networks to be trained, a same proportion of the sample, have made the document management from the institutional email. In contrast to the referents of block chain technologies, the intelligent execution of strategic planning in most cooperatives is positive thanks to the development and design of their web page, in turn, they appropriate tools that respond easily to the needs of processing and interconnectivity with the departments, associates or users of the entity. It is inferred that the managers under study execute decisions in a forceful way, to respond to changes in the technological environment due to the practicality of processes, the integral use of communication systems, investment in research activities and the development of a culture of knowledge that allows constant innovation with a focus on high-level productivity [10].

Business trends are oriented to a new digital era, therefore, future cyber managers contemplate the idea of responding to market demands through a dynamic work supported by technologies, therefore, information management in virtual reality is a very important asset in an organization, where confidentiality, integrity and availability of sensitive information can become essential to maintain levels of competitiveness, profitability, legal compliance and business image, thus achieving, the achievement of the objectives of the organization and ensuring its economic benefits [11].

Starting from the theory of technological innovation it is understood that, at present, the focus of the managers is to orient the decision making to the construction of organizations in a system of networks and integral Online communications, that allows its human capital to invent and innovate applications, programs or other resources of the information to assure a differentiating factor in the society of the information, of course and based on the results, in the cooperatives there is an ideal human capital to create or manage the accounting software, financial, online transactions and business purposes, in another fraction, it is deduced that the Internet system is the most required and important for the cooperative sector because they indicate the course of action of the different practices and / or digital activities, see Figure 2.

The adoption of ICT in social economy enterprises is essential for their survival and competitiveness, an issue that is especially relevant for cooperatives, since they belong to the sub-sector of this economy and where their main source of resources comes from the market, which forces them to develop their

activity in contexts characterized by processes of strong competition [12], similarly, small and medium enterprises have required the construction of an Enterprise Resource Planning model to efficiently resolve the management of customer processes, inventory, payments, purchases, accounting and others such as taxes and management indicators, seeking that strategic information reaches the entrepreneur or manager in a faster, more timely and accurate [13], in that order of ideas, solidarity organizations specializing in savings and credit services have the task of improving their technological structures with advanced, comprehensive, portable, didactic and dynamic software at any level of the institution, see Figure 3.

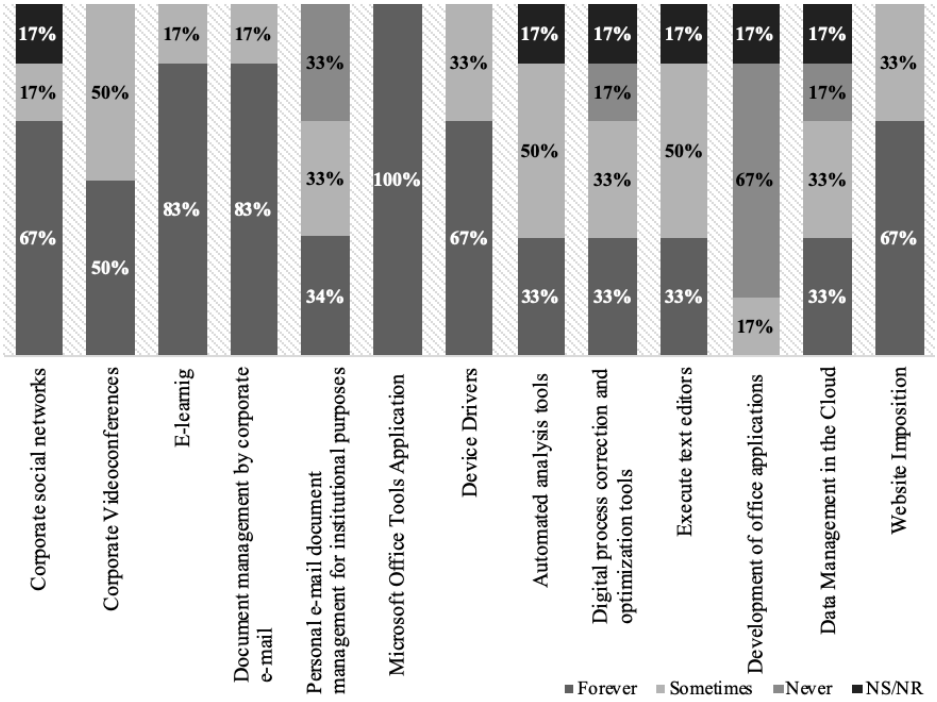


Figure 1. Use of ICT by managers in the cooperative sector.

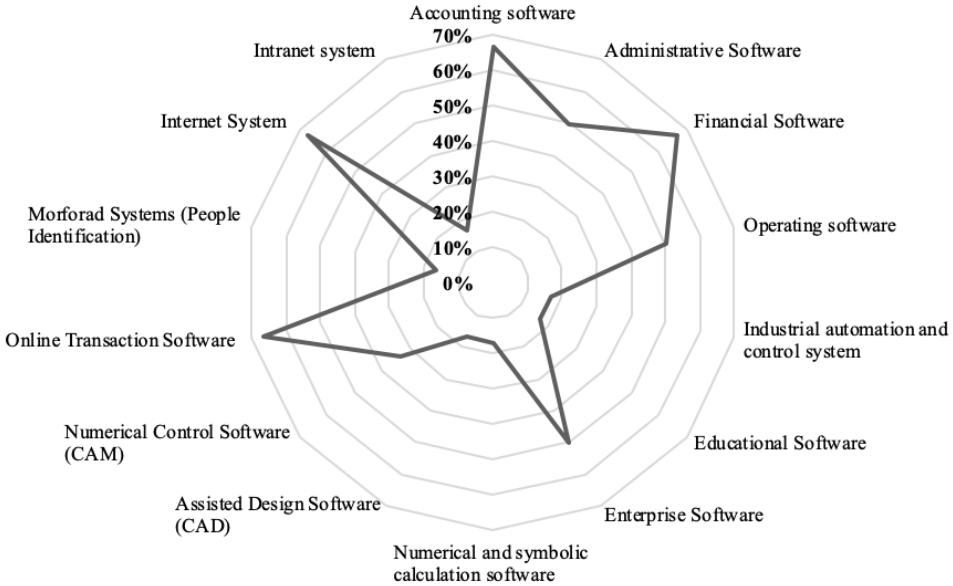


Figure 2. Systems and software implemented by the cooperative sector.

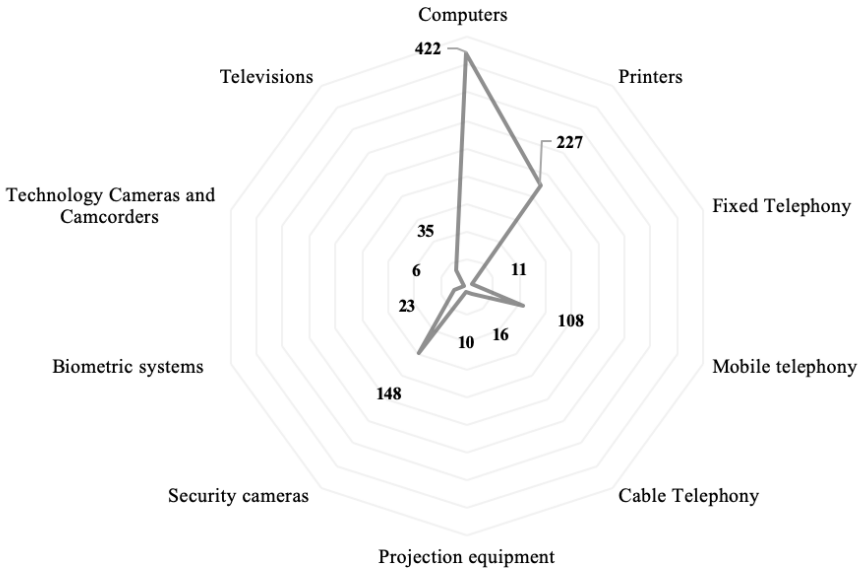


Figure 3. Equipment and technological tools implemented by savings and credit cooperatives.

When analyzing other research backgrounds, it is generally considered that agri-food cooperatives are below the national average for all companies in terms of the level of digitalization, showing a certain "technological backwardness" [14]. On the other hand, organizations allocate a low percentage of their income to investing in changes to improve their services through information technologies [10]. When data are analyzed and compared with the region's cooperative sector, they do not have a high installed capacity in relation to ICT resources. However, in recent years, solidarity organizations have recognized the importance of these resources and have allocated less than 30% of their profits to the acquisition of new equipment and technological tools; finally, it is unavoidable to induce that computers, telephony, printers and security cameras represent the greatest amount of these technological assets.

Through the descriptive analysis, it is observed in another similar study that 40% of the solidarity sector claims to have modern equipment and programs according to their needs [15], of course, the changes and technological advances are continuous and in their effect, causes entities an out-of-date of their digital processes or on the contrary, an imbalance or administrative instability to have an acceleration in the tasks of evaluation and measurement of their indicators, therefore, with all the assets it is important that internal customers point to innovation and the promotion of technological effectiveness and efficiency.

5. Conclusions

The cooperative sector in Colombia during the last century has shown growth and recognition in the territory thanks to collaborative work, consolidating collective benefit, equality and equity in accordance with its goals and principles of solidarity.

The managers of the cooperative sector assume, navigate and make use of the technologies (Office Suites), however, their role must be oriented to the digital environments (digital manager) constructing an administrative programming in different efficient and competitive multiprocessors, promoting protocols of telecommunication network, local area networks (LAN) and newsgroups, that allows a successful communication and interaction with the Stakeholders, responding easily to the problems that emerge from the specialized services of the cooperative.

To conclude, with the research it is deduced that the technologies will be the success factor and the key element to act competitively in the international scenarios and at the same time work hand in hand with the society in the territory and in the virtuality, a condition of reality that can be presented in any solidarity entity in the world, for this reason, managers must build digital scenarios that facilitate the

solution and give flexible and fast answers to the needs of collaborators and users with different applications and intelligent systems through the development of fifth generation of technology (5G) networks and digital identity (data protection). For this reason, managers must not only adopt a computer architecture as a strategic challenge but also, know the trends and forge their competences and skills in the use of them (added value).

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