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Challenges in the management of the Cuban extension process: management information system

Retos en la gestión del proceso extensionista cubano: sistema de información gerencial

Desafios na gestão do processo de extensão cubano: sistema de informação gerencial

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ABSTRACT

The university extension process requires being up to its time and in accordance with the dynamics of the environment, which is why its continuous improvement of the Quality Management System is essential, through the use of Information and Communication Technologies. The article proposes to expose the necessary elements for the design of a management information system of the extension process, as well as the benefits that its implementation will bring in the quality management of said process in Cuban Higher Education Institutions. To fulfill the objective, a concurrent mixed investigation was carried out using theoretical methods (historical-logical, inductive-deductive and analysis-synthesis) and empirical methods (documentary analysis, interview, questionnaire and systematization). As main results, the essential conceptual aspects of the proposal were established, the characteristics of a management information system that contemplates the process and quality management in unison were defined, and the benefits provided by its implementation in process management were determined, allowing its continuous improvement, as long as it becomes a reflection of the essential aspects of the management of the extensionist process, favors the availability and accessibility of information and improvements in management times, as well as the use of information to promote good practices and make decisions based on the

facts, in order to perfect the process with the active participation of its actors.

Keywords: information system; management; quality management; continuous improvement; quality management; system university extension.

RESUMEN

El proceso de extensión universitaria requiere estar a la altura de su tiempo y acorde a la dinámica del entorno, por lo que resulta imprescindible la mejora continua del Sistema de Gestión de la Calidad, mediante el empleo de las Tecnologías de la Información y las Comunicaciones. El artículo propone exponer los elementos necesarios para el diseño de un sistema de información gerencial del proceso extensionista, así como los beneficios que reportará su implementación en la gestión de la calidad de dicho proceso en las Instituciones de Educación Superior cubanas. Para dar cumplimiento al objetivo se llevó a cabo una investigación mixta, concurrente con el empleo de métodos teóricos (histórico-lógico, inductivo-deductivo y de análisis-síntesis) y empíricos (análisis documental, entrevista, cuestionario y sistematización). Como principales resultados se establecieron los aspectos conceptuales esenciales de la propuesta, fueron definidas las características de un sistema de información gerencial que contemple el proceso y la gestión de la calidad al unísono, y se determinaron los beneficios que aporta su implementación en la gestión del proceso extensionista, permitiendo su mejora continua, en tanto llegue a ser reflejo de los aspectos esenciales de la gestión del proceso extensionista, favorezca la disponibilidad y accesibilidad de la información y mejoras en los tiempos de gestión, así como el uso de información para promover buenas prácticas y tomar decisiones según los hechos, en función de perfeccionar el proceso con la participación activa de sus actores.

Palabras clave: extensión universitaria; gestión; gestión de la calidad; mejora continua; sistema de gestión de la calidad; sistema de información.

RESUMO

O processo de extensão universitária exige estar à altura do seu tempo e de acordo com a dinâmica do meio, razão pela qual é essencial a melhoria contínua do Sistema de Gestão da Qualidade, através do uso das Tecnologias de Informação e Comunicação. O artigo se propõe a expor os elementos necessários para o desenho de um sistema de informação gerencial do processo de extensão, bem como os benefícios que sua implementação trará na gestão da qualidade desse processo nas Instituições de Ensino Superior cubanas. Para cumprir o objetivo, foi realizada uma investigação mista, concomitante à utilização de métodos teóricos (histórico-lógico, indutivo-dedutivo e análise-síntese) e empíricos (análise documental, entrevista, questionário e sistematização). Como principais resultados, foram estabelecidos os aspectos conceituais essenciais da proposta, definidas as características de um sistema de informação gerencial que contemple o processo e a gestão da qualidade em unísono, e determinados os benefícios proporcionados pela sua implementação na gestão por processos. melhoria contínua, desde que se torne reflexo dos aspectos essenciais da gestão do processo extensionista, favoreça a disponibilidade e acessibilidade da informação e melhorias nos tempos de gestão, bem como a utilização da informação para promover boas práticas e tomar decisões baseadas sobre os fatos, a fim de aperfeiçoar o processo com a participação ativa de seus atores.

Palavras-chave: extensão universitária; gestão; Gestão de qualidade; melhora contínua; sistema de gestão da qualidade;

sistema de informação.

INTRODUCTION

Humanity is exposed to numerous transformations in all fields of action where it operates through its interactions with the other social actors, transforming it and influencing public policies, higher education can help us combat inequalities, improve the environment and advance in the task of overcoming underdevelopment with the support of governments Knowledge, science, technology and innovation (Núñez, 2017, p. 9).

Under the influence of the scientific, technological and productive revolution that is taking place and that imposes not a few transformations in all fields of action, Higher Education Institutions (HEIs) must be able to provide constant and continuous training of human resources, to respond to current and future demands.

Taking into account the current context, it is necessary not only to produce changes in pursuit of development, it is necessary for HEIs to assume Information and Communication Technologies (ICT) with greater preponderance in the management of their processes, to promote knowledge, provide greater and better access to information, promote quality learning and provide more efficient services.

The extension process, whose essence lies in the promotion of culture in the intra- and extra-university community to contribute to its cultural development, requires, for the sake of improving its management, expanding the use of ICT.

The studies consulted refer that in HEIs there are few computer systems that automate university management (Ruiz and Vidal, 2018) and, the corporate information that moves in university settings, for the most part, is not processed through systems and therefore so much comes from different sources, it does not comply with the principles of uniqueness and integrity of the information, which compromises its fidelity (Ruiz and Vidal, 2018; Acosta *et al.*, 2017). Similarly, all the information is not stored in a centralized document server, which can cause the loss of documents and the historical memory of activities and projects carried out.

As part of the improvement of process management based on the quality of Cuban Higher Education, since 2012 the Key Result Area (ARC) 4 was established, called Higher Education Management, whose objective was to increase the quality, efficiency and rationality of management; from which each HEI must have designed its management system oriented to quality and integration of processes.

Currently, a strategic objective is aimed at the development of computerization and digital culture for the improvement of the management of university processes and another is projected in order to ensure quality in Higher Education. The present investigation is in total correspondence with the strategic objectives, specifically with those mentioned above, to which it will contribute from the extension management.

HEIs have very few modern tools to improve management and support the decision-making process, so management is executed based almost entirely on the personal experience and perceptions of decision-makers and not on the facts that historical data can corroborate (Ruiz and Vidal, 2018).

Information Systems (IS) have always existed in the management of organizations in different ways to record, process, store, retrieve and present information about their operations and activities.

That is why having information systems in universities would contribute to solving institutional information needs, such as: detecting process needs, implementing indicators in information systems to assess the quality and productivity of substantive processes, and generating information that allows a systematic analysis of management processes and their results (Barcos, 2008).

There are experiences in the use of Information Systems or the use of ICT for the management of university processes (Cano *et al.*, 2014; Guilarte *et al.*, 2019; Quiñones *et al.*, 2018; Zambrano *et al.*, 2020); however, few have taken into account the extension process and in the cases studied they are not based on the binding aspects of process management. Assuming management by processes in the university environment entails working on management taking into account international ISO standards in a changing, diverse context and depending on the characteristics of the environment of each HEI and the expectations and needs of actors and users.

Taking into account the context, an investigation is carried out at the Center for Studies for the Improvement of Higher Education (CEPES) of the University of Havana, as part of the Project "Theoretical, methodological and practical contributions to the development of management of quality in Higher Education Institutions of the Ministry of Higher Education (MES) system", integrated into the Higher Education and Sustainable Development Sector Program, one of whose study aspects is based on designing an "Information system to support the management of the quality of the university extension process".

This research has as background the studies developed on the process in the country and the result of a doctoral research that proposes the design and implementation of a Quality Management System of the extension process (SGC-EU) for the University of Havana (González, 2016), based on which and taking into account the continuous improvement of the SGC-EU, it is intended to design an information system for the management of the process.

That is why; the objective of this work is to expose the necessary elements for the design of a management information system of the extension process, as well as the benefits that its implementation will bring in the quality management of said process.

MATERIALS AND METHODS

Mixed concurrent research was developed, since the collection; analysis and linking of quantitative and qualitative data obtained from the application of theoretical and empirical methods were used in the same study.

The documentary analysis was carried out for the consultation of scientific articles, publications in various formats, both national and international, referring to the subject in question, which favored the determination of the main regularities in the approach to this problem, based on the use of the historical-logical, inductive-deductive and analysis-synthesis methods.

Interviews were conducted with selected directors and a questionnaire was applied to other directors of the extension process in all the IES of the month with the use of the *Google surveys tool*, to identify knowledge about quality management systems, information systems, and management information systems; as well as their

assessment of the state of information management and the effects derived from the mechanisms used for it.

These methods, together with the systematization method, made it possible to determine conceptual aspects and characteristics of Information Systems (IS); as well as which IS have been implemented and which ones contemplate the extension process, how they manage the process in an IS and what characteristics are necessary and essential to carry out an effective and efficient management of the process with the use of an IS.

The study covered all HEIs attached to the Cuban Ministry of Higher Education and will be extended during the 2020-2023 period, as part of a Sector Program project.

RESULTS

HEIs build, reproduce and promote culture from theory and practice, based on the management of their substantive processes (training, research and university extension) which, interrelated with the rest of the university processes, manage to fulfill their social task of educating professionals committed to the development of society. It is essential to take into account the demand and expectations of actors and users, who will impose the goal that institutions must achieve.

The documentary analysis carried out made it possible to assert that improving the quality of Higher Education requires HEIs to respond to the accelerated dynamics of the environment, which must be associated with the design of participatory policies that "help the university-society link move towards degrees higher achievement levels in the most dynamic areas, which will act as drivers

for the rest of the academic system" (González *et al.*, 2020, p. 51).

Quality is a subject of constant debate and a requirement of international organizations towards HEIs, in the same way it is a challenge and a goal of the 2030 Agenda, which leads to the readjustment and improvement of current management systems. The implementation of quality management systems in educational organizations is a current issue and a management tool that directly contributes to the achievement and fulfillment of institutional objectives. Quality is a central aspect of university management and of the processes that comprise it, in order to satisfy the demands of society at all levels.

The HEIs that have opted for process management have designed their systems based on ISO 9001, which has passed to the most updated version in 2015. Subsequently, other ISO standards have been published that have allowed a greater scope and improvement of the QMS designed and implemented. The ISO 9000 series is widely used in educational organizations at an international level, as a way to increase the quality of their management and to meet the demands of society. "However, in Cuba there are few experiences in this field" (Guerra and Meizoso, 2019, p. 112).

The ISO 9001 standard is a sample of the international consensus regarding what is conceived as a quality management model; "The conscious and committed application of its principles and requirements would allow organizations to effectively improve their performance, based on the development of a quality culture for all their staff" (Guerra and Meizoso, 2019, p. 78). The transit of the SGC, based on the new regulations, leads to taking into account the integration of the systems and the application of the appropriate standards for the success of the organization. That is why, in addition to ISO 9001 (2015), which is in function of providing

confidence in products and services, the application of other relevant standards for an educational organization must be taken into account.

The application of the NC ISO 21001 (2019) "Educational organizations. Management systems for educational organizations", provides a common management tool for educational organizations; the ISO 9126-1 (2005) standard "Software engineering. Product Quality" establishes quality characteristics for software products; the NC ISO 31000 (2018) "Risk Management. Guidelines" contributes to managing the external and internal risks of any organization; ISO/IEC 25000, "Quality requirements and evaluation of systems and software", is a family of standards whose objective is the creation of a common framework to evaluate the quality of the software product; NC ISO 9004 (2018) "Quality management. Quality of an organization. Guidance for achieving sustained success" provides guidance for organizations to achieve success in a complex environment and ISO 26000 (2018) "Social Responsibility Guidance", which contributes to achieving the benefits of operating in a socially responsible manner, which it is in full correspondence with the SDGs and the 2030 Agenda.

In accordance with NC ISO 21001 (2019, p. 8), "there is a critical and continuous need for educational organizations to assess the degree of compliance with the requirements of students and other beneficiaries, as well as other interested parties and that improve their ability to continue to do so." The continuous improvement of the SGC-EU (2016) allows the adaptation of the standards and places the system in context for greater feasibility from the use of computerization.

At present, high levels have been reached in the development of science and technology. This time "is characterized by the

unprecedented confluence of technologies in the physical, digital and biological spheres" (Ruiz and Vidal, 2018, p. 669), added to this the current environment of confinement and physical and social isolation product of the COVID pandemic 19, has led to a greater virtualization of organizations, within them education has had to readjust its training processes. The use of social networks and the creation of educational systems have been expanded and branched out, as well as the generation of a greater number of information systems.

Organizations, since the sixties, have drawn attention to the high value of information and that it must be of quality for correct decision making, which directly affects the success of an organization; According to Barcos (2008), "In the educational field these assertions are confirmed" (p. 210).

The information is used and handled in various ways in educational institutions depending on the interests, purposes and management mechanisms implemented in HEIs. One of the ways used in the field of education, according to Barcos, is the IS which must be capable of processing a wide range of data and states that:

Throughout the structure, the greatest need continues to be the creation, implementation and effective operation of information systems that allow for data aimed at students, teachers, researchers and extension agents and administration and management for the solution of various problems and for evaluate the effect of internal educational actions and on society (Barcos, 2008, p. 210).

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Information is a necessary and essential resource to manage any process, so the extension is not left out, but requires updated, truthful and reliable information. In turn, it must be received promptly in order to make pertinent, timely decisions adjusted to the historical moment.

The role given to university extension as a process that contributes to the training of comprehensive professionals, and at the same time impacts the intra- and extra-university community, requires that its management be systematically improved based on quality, with which coincide 100% of the interviewees and respondents. Contributing to a better understanding, entrepreneurship, comprehension and interpretation of this substantive process by social actors, who intervene as transforming agents of quality management, is a permanent purpose of their work.

To improve the quality of the process, HEIs have sought various ways, including process management. There are experiences in several HEIs in Cuba that have created quality management systems based on process management, assuming that a Management System is "a set of interrelated elements of an organization or that interact to establish policies, objectives and processes to achieve those objectives" (ISO 21001, 2018, p. 2). Some of these systems have taken into account the extension process; other HEIs such as the University of Havana also have a SGC to manage the extension process.

This SGC designed for the University of Havana due to its characteristics, typology and conception, can be applied in any HEI taking into account the context and the characteristics of the HEI in question. However, in the specific case of Cuban HEIs, the existence of a National University Extension Program that defines the policy, conception, guidelines and management of the process for the country, allows a

homogeneous conceptualization, which is in full correspondence with the SGC, allows its operationalization (figure 1) and makes it possible to apply it with greater feasibility, adapting it to each HEI.

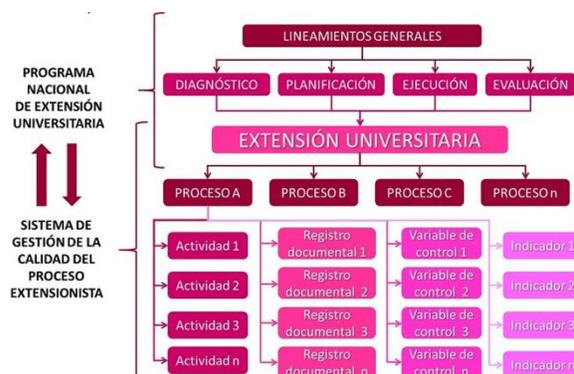


Fig. 1- Operationalization of the PNEU from the SGC-EU-UH

The authors assumed the conception of the Quality Management System of González (2016, p. 34), which defines it as:

the system of constant and systematic interactions of the processes, between them and the environment, based on effective and efficient management and pending continuous improvement, which allows establishing and complying with the organization's policy and achieving its objectives and customer satisfaction its interest groups taking into account its actors and the environment.

Taking into account the above, and in particular what is observed in Figure 1, it is feasible to assess the possibility of managing the extension process from the SGC, since it allows the actors greater clarity and understanding, by facilitating the definition of each process, its activities and other

matters necessary for its effective and efficient management.

However, the application of the SGC is not an obligation for HEIs, although it is a requirement and a necessity at present, since as the ISO 21001 standard refers, a Management System for Educational Organizations (SGOE) is needed when a organization:

a) needs to demonstrate its ability to support the acquisition and development of competencies through teaching, learning or research; b) aims to increase the satisfaction of students, other beneficiaries and staff through the effective application of its SGOE, including processes for system improvement and ensuring compliance with the requirements of students and other beneficiaries (2019, p.2).

In accordance with the above, the application of a SGC-EU demands participatory policies that "are those that allow people to be part, actively and consciously, of decision-making, execution and evaluation of government processes, community or institutional to which they belong" (González, 2016, p. 10). However, it is necessary to state that the application of the QMS does not de facto imply quality management. For this, it requires "a set of actions leading to the development of values and daily practices that facilitate high-quality performance with conviction, from the institutional senior management to the operational base of the organization, which implies developing a culture oriented towards quality" (González *et al.*, 2020, p. 54).

To manage a QMS, it is essential to apply the PHVA methodology (Plan, Do, Check, Act) as part of continuous improvement, which is why it was required as a first step to update the QMS-EU according to the new ISO regulations, to subsequently create an information system that contributes to the

constant improvement of said SGC. The update of the SGC has incorporated constant modifications that have enriched the designed system.

The analysis and assessment of the SGC by the authorities of the Directorate of University Extension (DEU) of the MES led to the proposal of its implementation through an Information System that allows the efficient and effective management of the process at the country level.

The SGC-EU declares six sub-processes, namely: Promotion of Culture, Management of the Amateur Artists Movement, Management of the Sports Movement, Education and Training, Management of Cultural Facilities and Project Management, which interrelate with each other and with other university processes.

The updating of the SGC led to the addition of a sub-process called Management of Honorary Chairs, which manages the work of these chairs from the integration of substantive processes, in order to promote academic and scientific results, as well as projects, activities, actions and tasks in compliance with their social function.

On the other hand, the continuous improvement also indicated the need to modify the culture promotion thread and give it a new name and meaning (Cultural promotion management), which implied modifications in its conception, for which it is assumed as the process that is responsible for the management of activities, actions and isolated tasks of cultural promotion, with the active participation of students and teachers, to raise the cultural education of the university community and society.

As a result of the questionnaire applied to directors of the extension process in all HEIs, it was found that the proposal of the seven sub-processes to manage university

extension at the country level (figure 2) was highly received, since they considered 100% of the sub-processes Management of culture promotion, Management of the amateur artists movement, Management of the sports movement, Management of the Honorary Chairs and Project Management, for extension management. For their part, the Education and Training sub-processes and Management of cultural facilities were considered by 95% as very important for the management of the process.

The interaction in the management of the university extension threads with the rest of the substantive, strategic and support processes take place in a changing environment, where the actors must be prepared for the dynamics of current conditions. Updating institutional capacities in extension management with the accelerated incorporation of Information and Communication Technologies was assumed by 100 % of interviewed extension process managers as the most contextualized way for extension action.

For this reason, assuming and considering the design of an information system for the management of the process will not only contribute to its operationalization based on the use of ICTs, but will also place it in the current context and according to its own dynamics.

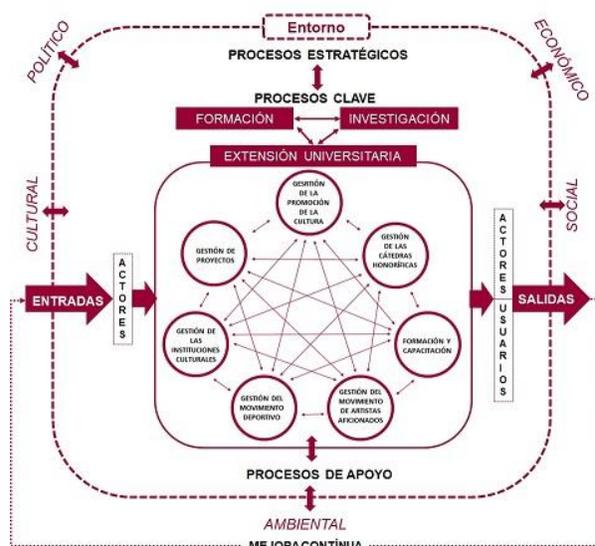


Fig. 2- Map of University Extension processes of the University of Havana

Note: updated from González (2016)

This decision was justified due to the non-existence of a single mechanism that allows the collection and analysis of information; the low effectiveness and efficiency in the treatment, analysis and distribution of information over time; the necessary speed of communication between the different levels, areas and HEIs; deficiencies in the internal control of the university extension process; the necessary control and systematic evaluation of the actions of the process; organizational culture; the scarcity of knowledge in the management of information technology; the diversity in the treatment of the processes that make up the university extension at the country level; in addition to the fact that there are different sources requesting the same information from the same areas, which brings with it various situations that make management difficult; aspects all referred to by the actors of the process in the applied questionnaires and conducted interviews.

Based on the above, and as a result of the systematization method, the conception of Andreu *et al.* (1991), which is the most widely recognized and accepted by the scientific community, since, although it was developed for companies, it can be used in organizations. This author defines an information system as:

formal set of processes that, operating on a collection of data structured according to the needs of the company, collects, prepares and selectively distributes the information necessary for the operation of said company and for the corresponding management and control activities, supporting the least in part, the decision-making processes necessary to perform business functions of the company in accordance with its strategy (Andreu *et al.*, 1991, p. 149).

The development of information technologies has conditioned the promotion of an IS typology. According to the research by Acosta *et al.* (2017), there are several alternatives based on the decision making proposed by Senn (1992), who considers that IS can be: Data Processing (TPS Transactional processing Systems), Information Systems for Administration or Management (MIS-Management Information Systems), Decision Support Systems (DSS Decision Support Systems), Executive Information Systems (EIS Executive Information Systems) and Expert Systems or knowledge-based systems (WKS Knowledge Working Systems).

Management Information Systems (GIS) have evolved over time. From informal communication channels in structure and use; Electronic data processing systems with the use of information technology up to the

GIS. The latter introduce the strategy "understood as the formulation, execution and evaluation of actions that will allow an organization to achieve its objectives" (Acosta *et al.*, 2017, p. 104). This definition gave way to the Strategic Information Systems (SIE), which are an inseparable part of the organization; On the one hand, it establishes a competitive advantage in the organization, since it favors decision-making based on the management of updated and timely information (Puello *et al.*, 2013).

The managers interviewed considered 95% (21 managers) that a management information system would enable improvements in the management of the process and only one valued that it would partially do so.

DISCUSSION

The analysis of several works about management systems that take into account or were designed for the extension process (González, 2013; Cano *et al.*, 2014; Guilarte *et al.*, 2019; Zambrano *et al.*, 2020) allowed to determine that most concentrate their management on aspects of sport and culture; management of physical spaces for enjoyment and recreation; socialization of prizes obtained in sports competitions and the movement of amateur artists, as well as about projects and honorary chairs.

In the authors' opinion, the IS that most contributes to process management is the one presented by Zambrano *et al.* (2020, p. 145), "by including the possibility of systematizing knowledge and evaluating the results from the opinion of those involved". However, from the conception of the extension process it differs from that assumed in the present investigation, as they are different contexts; however, it is worth taking into account different contributions of

this work such as: the registration of programs and projects, the introduction of information on intervention strategies and financing, the constant monitoring of the management of each project, as well as the generation of individual and condensed reports at each stage of management, for which it manages to be a reliable repository, facilitating information in the self-assessment and external evaluation processes.

Taking into account what was stated above, the authors suggested that, based on the updating of the SGC-EU according to ISO standards and the context, the University Extension Management Information System for HEIs of the MES must be able to:

1. contain the phases of the management cycle (planning, organization, execution and evaluation and control) to manage each thread of university extension;
2. generate spreadsheets, models and activity files according to each process;
3. generate reports of each process;
4. generate statistical reports;
5. incorporate information immediately, relevant in time and reliable;
6. give actors and users access, as appropriate, to the information prepared and useful for decision-making;
7. have reliable and up-to-date information that can be used as a management and policy evaluation tool;
8. allow operational control;
9. allow information and evidence to be stored;
10. perform trend analysis;
11. allocate resources, as appropriate;
12. promote cooperation between institutions;
13. be transparent in the information;
14. interrelate with other university processes;

15. be open and flexible to dynamically manage the process;

16. Create conditions that generate commitment from the institutional management in relation to IT responsibility.

To achieve these aspects, a socialization and training of the SGC among the actors of the process is required, for a better understanding and understanding of the aspects it contains, for its future application in an IS. In the same way, systematic feedback is needed between the actors about each advance in the SI design, to receive proposals, criteria and evaluations, in a way that guarantees their active participation, and establishes the commitment to change and transformation of process.

Coinciding with Acosta *et al.* (2017), the SI will serve as a support to organize the investigations of the process, as well as its sub-processes and the activities that comprise it, based on the interests of the institution and its environment. The use of information technologies becomes a powerful tool, to the point that "it is positioned as one of the main sources of innovation and competitive advantage in the sectors that have implemented them, as is the case of education" (Acosta *et al.*, 2017, page 104).

As expressed by Zambrano *et al.* (2020), access to information is extremely useful in HEIs, because it facilitates "the actions of planning, diagnosis, operation and supervision of plans, projects and programs; In addition, it contributes to the evaluation of the activities, results and impacts of university management" (p. 145).

On the other hand, handling information implies levels of complexity and knowledge of the process in question is vital for this; In addition, in this case it is necessary to know the real potential of the means used to organize and recover it, as well as the

aspects of quality management. As Barcos (2008) states, in educational organizations "Information systems are included in all quality assessment models and are taken into account as predictors for the scope of results; becoming an important and essential dimension in the processes of evaluation and accreditation of university education" (p. 212).

The above justifies the need and usefulness of a Management Information System for the extension process; however, in order to design the SIG, there are challenges that must be overcome, related to: the limited knowledge about quality management among the actors of the extension process; limited knowledge of ICTs and, therefore, of information systems; organizational culture; as well as resistance to change, among others. For this reason, work must be done to create an organizational culture that favors dialogue in learning, participation, motivation for a culture of quality and the use of technologies in the improvement of the management of the extension process.

Improving the quality of the extension process is a premise of the HEIs that implies that the University Extension Quality Management System of the University of Havana can be applied in other HEIs based on the analysis of the context and its own characteristics. Continuous improvement, in this case, entails adapting it to updated ISO standards and associating it with the Management Information System.

The design of a Management Information System for the management of the extension process is pertinent and timely, in order to mitigate or eliminate the deficiencies identified on this matter in the management of the process, such as the lack of a single mechanism that allows the collection and information analysis.

The Information Systems studied for the management of the process, do not take into account all the processes that must be managed within the extension macro-process and are dedicated, fundamentally, to socializing events and results of the sports and cultural activities of the HEI, as well as the management of physical spaces for enjoyment and recreation.

The Management Information System for the extension process must be able to reflect the essential aspects of management, quality management and the extension process and this integration will enable the availability and accessibility of information, improvements in management times, the use of information to promote good practices, decision-making based on the facts and continuous improvement, which will favor perfecting the process with the active participation of its actors.

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