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ORIGINAL

ICT as a Dynamizing Axis in the Generation of Indicators for the Social Appropriation of Knowledge in the Research Groups of the University of La Guajira

Las TIC como eje Dinamizador en la Generación de Indicadores para la Apropiación Social del Conocimiento en los Grupos de Investigación de La Universidad de la Guajira

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ABSTRACT

In an increasingly digitalized and globalized era, it is vital to promote research and innovation in higher education institutions to have the ability to effectively manage knowledge and take advantage of Information and Communication Technologies (ICT). Therefore, the combination of these tools is essential to improve efficiency, encourage collaboration and facilitate the dissemination of knowledge in the university environment. The present study focuses on analyzing knowledge management and the use of ICT in the research groups of the University of La Guajira, located in Colombia. In theoretical terms, various sources are used such as M.A. Soto Balbón, N.M. Barrios Fernández (2015), Cabero (2015), Carneiro (2009), among other relevant authors. The research approach is descriptive, with a non-experimental and field design, of a transectional type. The sample included 80 directors belonging to categorized and uncategorized research groups, covering a complete population census. A questionnaire was used with 20 dichotomous items and five response options. The results indicated that the members of the research groups have access to the ICT infrastructure and show adequate management of it. Furthermore, the fundamental role of networks for the transfer of knowledge is highlighted, placing this aspect at a moderate level of effectiveness.

Keywords: Management; Knowledge; Technologies; Research.

RESUMEN

En una era cada vez más digitalizada y globalizada, es vital para promover la investigación y la innovación en las instituciones de educación superior contar con la habilidad de gestionar eficazmente el conocimiento y aprovechar las Tecnologías de la Información y la Comunicación (TIC). Por ende, la combinación de estas herramientas es esencial para mejorar la eficiencia, fomentar la colaboración y facilitar la difusión del conocimiento en el ámbito universitario. El presente estudio se centra en analizar la gestión del conocimiento y el uso de las TIC en los grupos de investigación de la Universidad de La Guajira, ubicada en Colombia. En términos teóricos, se recurre a diversas fuentes como M.A. Soto Balbón, N.M. Barrios Fernández (2015), Cabero (2015), Carneiro (2009), Minakata, Arceo A. (2009), entre otros autores relevantes. El enfoque de la investigación es descriptivo, con un diseño no experimental y de campo, de tipo transeccional. La muestra incluyó a 80 directores pertenecientes a grupos de investigación categorizados y no categorizados, abarcando un censo poblacional completo. Se empleó un cuestionario con 20 ítems de tipo dicotómico y cinco opciones de respuesta. Los resultados indicaron que los miembros de los grupos de investigación tienen acceso a la infraestructura de las TIC y muestran un adecuado manejo de las mismas. Además, se destaca el papel fundamental de las redes para la transferencia de conocimiento, situando este aspecto en un nivel de efectividad moderado.

Palabras clave: Gestión; Conocimiento; Tecnologías; Investigación.

INTRODUCTION

Information and Communication Technologies (ICT) play an increasingly crucial role in the university environment, being essential to drive significant changes and generate new expectations that support an effective transformation in knowledge management (KM), both for teachers and research groups. Teachers face the challenge of being the main drivers of productivity in Higher Education Institutions (HEIs), ensuring results recognized by Colciencias in categorizing higher education institutions in Colombia while transforming how the globalized world is perceived in research.

In this context, researchers must be updated and familiar with the new tools to enrich the research process and keep it at the forefront of the environment's needs. In universities, developing basic competencies in using ICTs in research groups is essential. The objective is to analyze how ICTs influence Knowledge Management in educational institutions, especially in research processes.

The use of ICT in the research process allows researchers to share knowledge individually and interact with the scientific community through virtual tools and knowledge networks. These tools include e-mail, chat, forums, wikis, links to web pages, directories, surveys, and electronic consultations.

Research professors who master essential skills in using ICT tools available at the University of La Guajira can transform their knowledge and, therefore, their research process. However, to achieve this, it is essential to understand knowledge management and its integration through ICT in the research groups of the institution. In this sense, this research focuses on determining how information and communication technologies (ICT) are fundamental to promoting research and innovation at the University of La Guajira, using research groups as academic and scientific progress engines.

Given the nature of this research, which analyzes knowledge management models supported by Information and Communication Technologies (ICT), the theoretical foundations that support this study are as follows:

Ict support in the CESI model (Nonaka-Takeuchi)

The CESI model, proposed by Nonaka and Takeuchi, describes knowledge generation in four phases: socialization, externalization, combination, and internalization. These phases facilitate the transition from individual tacit knowledge to explicit collective knowledge and vice versa. In this process, ICT plays a crucial role in supporting the intermediation and application of knowledge in the production cycle. Knowledge management (KM) is envisioned as a mobilization that drives the generation, brokering, and application of knowledge supported by ICTs. KM focuses on sharing individual knowledge to generate new knowledge collectively and individually, giving rise to a knowledge spiral. L. Hidalgo (2015) explains the conversion processes of different types of knowledge through specific phases, showing how knowledge is managed step by step with the support of ICT.

Bustelo And Amarilla Model For Knowledge Management (Bustelo And Amarilla, 1999)

This model focuses on the dynamics of educational informatics and recognizes the importance of the participation of various actors in the construction of knowledge. In addition to document management, it emphasizes information management, which includes corporate databases and computer applications. With adequate information management, it is possible to achieve knowledge management. This model underlines that Knowledge Management is an integral management model for the whole organization. Before implementing a knowledge management system, it is necessary to ensure adequate information management. The transition from information management to knowledge management involves several essential components that must be considered.

Technology Integration Model (KERSCHBERG, 2000)

The technological integration model proposed by Kerschberg (2000) recognizes the heterogeneity of knowledge sources and establishes different components integrated in layers. This technological approach is characterized by its architecture, enhanced by different technologies oriented to support knowledge management. The model presents different levels or layers of action, such as presentation, Knowledge Management, and data sources. It stands out for its high level of integration between the components of each layer, which allows working with common standards and language, facilitating communication between users. This model uses a portal to present the results of the Knowledge Management processes, which makes it a point of interaction between users and knowledge results. In higher education institutions (HEI), this model is applied in research groups where members share and interact with academic and research documentation, promoting the integration and exchange of information and knowledge within the scientific community.

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METHODS

In this section, we present the results of the study where we analyze ICT as a dynamizing axis in the Generation of Indicators for the Social Appropriation of Knowledge in the Research Groups of the University of La Guajira; the research approach is descriptive, with a non-experimental and field design, of transactional type. The sample included 80 directors from categorized and non-categorized research groups, covering a complete population census. As stated by Hernández, Fernández, and Baptista (2014), these studies intend to measure or collect information independently or jointly on the concepts or variables they refer to. A questionnaire with 20 dichotomous items and five response options was used. For the statistical analysis, frequency distributions were used to calculate the absolute (fa) and relative (%) frequencies of the responses given by the population under study.

RESULTS AND DISCUSSION

At the end of the analysis of the data and the answers provided by the professors who are part of the research groups at the University of La Guajira, there is an apparent inclination towards the application of Knowledge Management and the effective use of Information and Communication Technologies (ICT), as well as its notable influence in the groups. This trend is supported by an affirmative response rate of over 80 % from an equivalent percentage of teachers using ICTs.

Another relevant aspect is the collaboration in all ICT-related activities by all the professors integrated into the research groups. This greatly facilitates the dissemination of academic and scientific research, providing ample space for sharing knowledge with colleagues and professionals engaged in research internally and externally.

It should also be noted that researchers employ personalized approaches to transmitting knowledge through ICTs, which significantly enriches and diversifies the work. This practice dynamizes and broadens the methods of understanding the results, facilitating their comprehension by various audiences that access them in different ways.

A significant contribution of ICTs lies in their capacity to externalize knowledge to research groups and the scientific community, generating an adequate circulation of knowledge to various spheres of society and raising the prestige of the University of La Guajira.

The availability of new technologies plays a fundamental role in facilitating the effective exchange of information between research groups and their peers internally and externally, which leads to enriching feedback in the research processes.

Another conclusive factor is the presence of virtual and physical repositories designed to house the results of scientific research at the University of La Guajira. These repositories enable agile and timely access to various information, promoting valuable information and a valuable exchange of experiences and knowledge.

The management of internal and external documentation receives strong support and favoritism from researchers since it provides security and accessibility in a simple way through ICT, constituting fundamental support for the research initiatives of all groups at the University of La Guajira.

The categorization established by Colciencias has strengthened the databases, supported researchers and research groups, and fostered the creation of new knowledge management models.

Respondents widely support the fluid transfer of knowledge, experiences, and informal learning related to ICTs, highlighting the relevance of empirical knowledge as a fundamental component of effective knowledge management.

Regarding the formal training opportunities provided by the University of La Guajira to research groups and spaces for ICT training processes, respondents widely recognize them, which is a very positive situation for improving knowledge management processes within and outside the institution.

Ultimately, those evaluated express that their respective research groups are thoroughly linked to scientific knowledge networks, which has allowed them to publish reports, essays, and scientific articles in these networks in the last ten years.

CONCLUSIONS

Based on the need to organize knowledge management at the University of La Guajira, the following is recommended in order to strengthen research processes:

Implement a Knowledge Management Center to provide professional and technical support, offering information services on research topics relevant to the university and the scientific community.

Designation of a knowledge manager responsible for identifying, collecting, managing, and storing the university's knowledge, promoting creative and collaborative interaction among research groups.

Design of a knowledge management manual as a tool to assist researchers, including requirements and models for sharing knowledge and experiences with colleagues and other research institutions.

We are structuring specific training processes on the latest innovations in ICT and knowledge management

tools for researchers and research groups.

Development of a knowledge management plan that incorporates guidelines and directives for knowledge management and scientific production within the University of La Guajira.

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