

Unveiling Influence: Assessing the Effect of ICT Tools on Student Activities through Knowledge Management Processes

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Abstract

The research examines the influence of Information and Communication Technology (ICT) tools on the connection between Knowledge Management (KM) processes and student activities in an educational setting. The research examines the influence of different information and communication technology (ICT) tools on the connection between knowledge management (KM) processes and student activities, including learning, outreach service, research and innovation, and placement, specifically in the context of Banaras Hindu University (BHU). The study utilizes Smart PLS as the analytical tool to examine the moderating impact of ICT on improving student engagement and outcomes by means of effective KM processes. The findings underscore the crucial significance of information and communication technology (ICT) tools in augmenting knowledge management (KM) processes, thereby fostering improved educational experiences and outcomes for students. This paper emphasizes the importance of strategically implementing Information and Communication Technology (ICT) in educational institutions. The goal is to establish collaborative learning environments that facilitate ongoing innovation and development.

Keyword: Knowledge Sharing, KM Process, ICT Tools, Students, Higher Education

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Introduction

ICT is crucial in shaping educational environments and changing how knowledge is acquired, shared, and utilized in today's digital era. Simultaneously, efficient Knowledge Management (KM) procedures are essential for educational institutions to capture and utilize their intellectual assets. Kumaravel (2018) Examined the influence of knowledge management facilitators on the evaluation tools and preparedness for implementing knowledge management in Indian higher education. Knowledge management practices can provide support for various aspects of higher education. However, certain pre-established factors such as organizational structure, technology, collaboration, and trust are necessary for this support to be effective. Nevertheless, the relationship between ICT tools and knowledge management (KM) processes in impacting student activities is not extensively studied. This study seeks to close this divide by investigating how information and communication technology (ICT) tools influence the connection between knowledge management (KM) processes and student engagement in different aspects. The widespread adoption of ICT tools has not only transformed conventional educational methods but has also brought forth a new era of possibilities and difficulties for both students and educational institutions. These tools consist of technologies that are in wide range, including Learning Management Systems and Virtual Assistants. Each tool has its own distinct capabilities that help with

teaching, learning, and administrative tasks. Knowledge Management processes play a crucial role in efficient educational systems by enabling the development, distribution, and utilization of knowledge resources.

Bhusry & Ranjan (2011) have identified the factors that determine knowledge management (KM) and the domains in which KM is applied in education system. They have developed a framework that can be used to implement KM practices and align organizational goals with objectives. Their findings suggest that KM can have a substantial impact on improving performance and effectiveness in higher education. The current study emphasizes the importance of enhancing Knowledge Management in educational institutions. It emphasizes the need to improve performance in important areas such as teaching and learning, research, and administrative services. Although the significance of both ICT and Knowledge Management in educational settings is increasingly acknowledged, their combined influence on student activities has not been thoroughly investigated. Although there have been studies on the impact of ICT adoption or KM strategies on student outcomes, there is a lack of research on how these two components work together to influence student engagement and overall success. Understanding the interconnected relationship between information and communication technology tools and knowledge management processes is essential for optimizing the student's experiences in Learning and academics. This research seeks to offer practical insights to students, how ICT tools can enhance the efficacy of knowledge management (KM) practices on student activities.

Furthermore, with the rising use of digital technologies in educational institutions to address the changing students need and adapt to new teaching methods, it is becoming more important to study the complex dynamics of ICT-enabled Knowledge Management in higher education. This research study addresses this deficiency in the existing literature by conducting an empirical investigation into how information and communication technology (ICT) tools enhance the influence of knowledge management (KM) processes on student activities in various areas, such as learning outcomes, research productivity, community engagement, and career readiness. This study seeks to address these research questions in order to make a valuable contribution to the ongoing discussion on educational technology and Knowledge Management. It aims to provide practical suggestions for enhancing the utilization of ICT tools to promote student achievement in higher education settings. This research seeks to offer an evidence-based decision-making and strategic planning initiatives to establish a learning environment that is accessible to all students by thoroughly examining the moderating impacts of information and communication technology.

Moreover, the current educational environment is marked by an unparalleled surge of digital natives - students who have been raised in a technology-saturated world. For these individuals, ICT is not just a tool, but an essential element of their daily lives, influencing how they consume information, work with others, and engage with educational materials. Thus, integrating ICT into educational practices is not merely a matter of convenience, but rather a necessity to fulfill the expectations and preferences of modern learners. Universities and colleges are under growing pressure to adapt to the demands of a rapidly evolving digital ecosystem. With the prevalence of online learning platforms, virtual classrooms, and digital libraries, educational institutions must not only provide access to these technologies but also ensure their effective integration into teaching methods. Knowledge Management is essential in this

scenario, as it enables institutions to optimize their intellectual assets and foster a culture of continuous enhancement and innovation.

Nevertheless, the effective execution of KM strategies necessitates more than just technological infrastructure; it demands a comprehensive comprehension of how knowledge circulates within and between academic communities. This encompasses not only the official distribution of knowledge through lectures and course materials, but also the casual sharing of ideas through student collaborations, faculty interactions, and extracurricular activities. In this context, the importance of ICT tools in facilitating and improving KM processes becomes more prominent. ICT tools provide various opportunities to enhance and support traditional KM practices. These tools include collaborative platforms for real-time communication and co-authorship, as well as data analytics software that offers insights into student learning patterns. Through the utilization of technology, educational institutions can optimize administrative procedures, customize learning encounters, and enable students to actively engage in their own education.

In addition, as higher education institutions aim to maintain competitiveness in a globalized market, the utilization of ICT-enabled Knowledge Management becomes a strategic advantage. Organizations that successfully leverage the combined power of technology and knowledge are more likely to attract highly skilled individuals, stimulate research breakthroughs, and cultivate valuable collaborations with industry and community stakeholders. To summarize, the convergence of ICT, Knowledge Management, and student activities presents a promising area for research and innovation in higher education. The incorporation of Information and Communication Technologies (ICT) in education has had a profound impact, especially in improving the Knowledge Management Process (KMP) and student activities. This synthesis examines the impact of different information and communication technology (ICT) tools on the connection between the components of knowledge management process (knowledge acquisition, conversion, organizing, sharing, utilization, and storage) and student activities (learning, outreach service, research and innovation, and placement). The literature review explores the concepts of Knowledge Management, Information and Communication Technology, and how they intersect in educational environments. This study examines how knowledge management processes, including knowledge acquisition, conversion, organizing, sharing, utilization, and storage, contribute to improving educational outcomes. Furthermore, it explores the potential of information and communication technology (ICT) tools such as Knowledge Portals, Learning Management Systems, and Virtual Assistants to facilitate and enhance these processes. Moreover, the review analyzes past studies on how information and communication technology (ICT) influences the dynamics of organizations and the performance of students.

Literature Review

This analysis serves as a theoretical basis for the current study. Information and Communication Technology tools, such as learning management systems and virtual assistants, have been shown to have a substantial positive impact on student engagement, comprehension, and academic performance in learning activities (Gupta et al., 2021; Toma et al., 2023; Metin et al., 2017). ICT integration in education promotes dynamic learning, enhances student engagement, and enhances academic performance and

classroom participation. It facilitates self-directed learning through the provision of electronic communication platforms, automated training courses, and virtual education systems. These resources enhance students' capacity to independently acquire and organize knowledge (Lavrentieva et al., 2019). Electronic document management systems and knowledge portals facilitate the effective organization and retrieval of research materials, thereby promoting improved research and innovation outcomes. The usage of ICT skills has a positive effect on knowledge management components and indicators of creativity. This implies that tools such as virtual libraries and multimedia methods enhance the acquisition, conversion, and utilization of knowledge (Kalashi et al., 2020).

ICT tools play a very significant role in involving students in higher-level thinking and problem-solving tasks, which are essential for research and innovation. Efficiently managing digital instructional resources facilitates the incorporation of different tools in to the curriculum, thereby enhancing higher-level cognitive abilities (Lim & Tay, 2003). The use of ICT in teaching and learning is linked to improved quality and performance in higher education institutions. This includes increased participation in interactive learning, improved examination outcomes, and overall progress of students. ICT tools enhance the achievement of curricular goals by providing efficient learning resources and enhancing the overall educational experience. ICT (Information and Communication Technology) tools improve the seamless integration of knowledge management processes, thereby enhancing the overall performance and creativity of students in multiple endeavors (Metin et al., 2017). This study seeks to examine the impact of ICT tools on the connection between KM processes and student engagement. Through this approach, it aims to acquire fresh insights into the workings of digital learning environments and make valuable contributions to the advancement of innovative educational methods in the 21st century.

Research Methodology

The study aims to evaluate the influence of ICT tools as a moderator in the relation between the Knowledge Management Process and the Activities of students at BHU. This study utilizes a quantitative methodology, employing Smart PLS software to analyze survey data collected from students and educational stakeholders. The survey encompasses assessments of knowledge management processes, utilization of technology such as information and communication, and student engagements. Structural Equation Modeling (SEM) is implemented to evaluate the direct and moderating impacts within the model. The sample comprises students from Banaras Hindu University to ensure the generalizability of the findings. This research utilizes Smart PLS for quantitative analysis and also includes a literature review to situate the findings within the existing empirical evidence. The review not only explains the foundations of ICT-enabled Knowledge Management but also identifies important variables and constructs relevant to the study. By establishing the research this approach improves the accuracy and consistency of the findings, giving a firm foundation for interpreting the results and making practical conclusions. The hypothesis of this study is that there is a positive relationship between the KM process and the activities of the students at BHU when ICT tools influence both by a moderating effect.

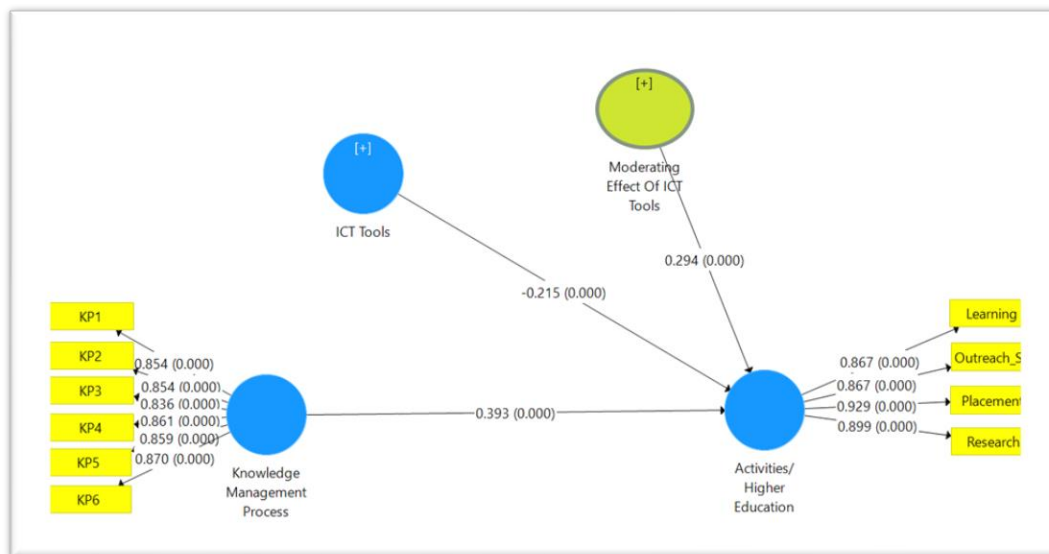
Data Analysis & Interpretation

The influence of ICT tools on the correlation between Knowledge Management processes and the endeavors of students at Banaras Hindu University. The product indicator method was used to compare the characteristics of an ICT tool as a moderator between the Knowledge Management Process and activities such as Learning, Outreach Services, Placement, and Research. According to table below, the ICT tools act as a moderator with a β value of 0.294, a T statistic of 4.788, and a p-value of 0.000, which is less than 0.05. This indicates a positive relationship between the KM process and the activities of stakeholders. The Q2 value of 0.483 indicates that the model has a strong predictive relevance (Hair et al., 2017; 2019).

Table 1: Hypothesis Result

	Original Sample (O)	T Statistics (O/STDEV)	P Values	Q ²
ICT Tools -> Activities/ Higher Education Process	-0.215	3.977	0.000	0.483
Knowledge Management Process -> Activities/ Higher Education Process	0.393	5.500	0.000	
Moderating Effect of ICT Tools _KM process _ Activities/ Higher Education Process	0.294	4.788	0.000	

Figure 1: The influence of ICT tools on the relation between KM process and Activities



The outcomes suggest that the use of ICT tools significantly enhances the relationship between knowledge management processes and student activities. Specifically, certain ICT (information and communication technology) resources such as Learning Management Systems and Virtual Assistants have a substantial impact on enhancing the outcomes of Knowledge Acquisition, Conversion, Sharing, and Utilization in the areas of Learning, Outreach Service, Research and Innovation, and Placement

activities. These findings highlight the importance of integrating appropriate ICT instruments into knowledge management (KM) strategies to optimize student engagement and academic success. The results emphasize the significant impact that ICT tools, such as Learning Management Systems and Virtual Assistants, can have on enhancing Knowledge Acquisition, Conversion, Sharing, and Utilization in student activities. These technologies empower students by enabling easy access to information, promoting collaboration, and offering personalized support, which helps them succeed in their academic endeavors and beyond. Furthermore, the model's high predictive relevance, as evidenced by the Q2 value of 0.483, highlights the validity and reliability of the findings. The ability to predict outcomes not only confirms the strength of the analytical method but also indicates that the model accurately captures the intricate relationship between ICT tools, Knowledge Management processes, and student activities.

These profound insights have significant implications for educational practitioners, policymakers, and administrators at BHU and beyond. By recognizing the symbiotic relationship between technology and knowledge, educational institutions can strategically employ ICT tools to optimize student engagement and attain desired outcomes. This involves not only allocating resources to advanced technological infrastructure but also promoting a mindset of creativity and proficiency in digital skills among students and faculty. Moreover, the results emphasize the significance of matching ICT-enabled Knowledge Management strategies with the particular requirements and goals of students. Educational institutions can optimize the impact of their technological investments on students' holistic development by customizing interventions that support learning, outreach service, research and innovation, and placement activities. This research emphasizes the substantial influence of ICT tools in enhancing the linkage between Knowledge Management processes and student activities. By harnessing technology, educational institutions can create dynamic and inclusive learning environments that empower students to excel in their academic, professional, and personal endeavors. To fully leverage the potential of ICT-enabled education and ensure student success in the 21st century and beyond, it is imperative to prioritize continuous research and innovation in this domain.

Discussion

The discussion examines the findings in connection with the existing body of literature and theoretical frameworks. This study explores how ICT tools influence the connection between KM processes and student activities, highlighting the importance of technological capabilities in enhancing educational processes. Furthermore, it explores the practical consequences for educational institutions in creating efficient knowledge management interventions using information and communication technology to promote student achievement. The study provides evidence that the use of ICT tools significantly enhances the relationship between Knowledge Management processes and student activities at Banaras Hindu University (BHU), highlighting the important role of technology in shaping the educational setting. This study reveals a strong connection between ICT tools as moderators and the improvement of student engagement and outcomes across different dimensions, using the Product Indicator Method. The implementation of ICT-based knowledge management processes greatly improves the university's competitiveness and enhances the activities of the stakeholders. This study sought to investigate the influence of information and communication technology (ICT) tools on the behaviors and actions of

university students, with a specific emphasis on the moderating effect. The hypothesis was validated, demonstrating that ICT tools effectively moderate the relationship between KM process and the activities of BHU stakeholders.

Knowledge Management and Information and communication technology (ICT) are crucial tools for achieving the university's goals and enhancing its efficiency. The objectives of the ICT-based knowledge management (KM) process are to facilitate a collaborative learning environment by enabling students to effortlessly acquire knowledge from both internal and external sources, exchange and merge information across different university communities, and deliver innovative services to university communities and the general public (Lucas et al., 2021; Numprasert & Poovarawan, 2008; Hendriks, 2001). The researcher discovered a range of information and communication technology (ICT) tools from previous studies. These tools include a knowledge portal, electronic document management system (EDMS), academic publishing tools, document management system (DMS), data mining tools, video conferencing software, personal digital assistants, learning management systems, social communities of interest, help desk technology, and virtual assistants (Agrawal and Mukti, 2021; Omona et al., 2010; Johnson and Karaikal, 2012). These tools aid in the efficient execution of knowledge management processes in higher education institutions and have a positive influence on the connection between KM processes and activities, as evidenced by previous research (Boussenna and Kharraz, 2021; Sahibzada et al., 2022; Cardona et al., 2013). The presence of Information and Communication Technology (ICT) has a beneficial impact on the Knowledge Management (KM) process and enhances the performance of students. For students, it encompasses the acquisition of knowledge, engagement in community services, pursuit of research and innovation, and securing of job opportunities. The researcher contributed by analyzing the influence of ICT tools on the knowledge management process and activities of the students at the university. Nevertheless, no prior research has been discovered that specifically examined the impact of ICT-enabled knowledge management processes on student activities (Pavel, 2018).

Conclusions

This study demonstrates that the use of Information and Communication tools has a notable influence on the connection between Knowledge Management (KM) processes and student activities at Banaras Hindu University (BHU). By conducting thorough analysis and utilizing advanced methodologies like Smart PLS, we have revealed the crucial impact of technology on shaping educational environments and promoting student achievement. This study not only adds to the current body of knowledge but also expands our comprehension of how information and communication technology tools enhance knowledge management processes to improve student engagement and results. By analyzing the intricate relationship between technology, knowledge sharing, and student engagement, we have highlighted the vital importance of purposefully integrating the use of information and communication technologies into educational systems. Moreover, our research highlights the importance of educational institutions creating efficient knowledge management interventions that utilize information and communication technology, specifically designed to meet the specific requirements of various stakeholders. ICT-based knowledge management (KM) processes can enhance collaborative learning environments and foster

innovation within university communities by facilitating seamless acquisition, sharing, and integration of knowledge.

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