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ICTs in Knowledge Sharing and Organization Culture:
Case Study of a Center for Continuing Education

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ABSTRACT

This study analyzes the knowledge value chain of a center for continuing education that offers skill development programs for adult learners. It analyzes how the center can improve efficiency and capacity by effective knowledge sharing (KS) that requires both information and communication technologies (ICT) and the conducive organizational cultures. The case study methodology was used to study the factors that influence KS in an academic environment. KS depends on the type of knowledge, motivation, and opportunity to share. The results show that both knowledge management systems and a conducive organizational culture are needed to implement an effective KS strategy. Thus, the study focuses on the emergent approach, i.e., focusing on interpersonal dynamics and the nature of their daily tasks, and engineering or management approach, i.e., focusing on the infrastructure of KS. This study shows how systematic and organized KS can help an organization offer continuing education services effectively and improve performance in the competitive marketplace.

KEYWORDS

Adult Education, Continuing Education Center, Information and Communication Technology (ICT), Knowledge Management, Knowledge Sharing, Knowledge Transfer

INTRODUCTION

Knowledge management is increasingly considered an important strategy to improve productivity, competitiveness, and organizational performance through efficient use of existing intangible resources hidden in the organization (Haas & Hansen, 2007; Wiig, 1997). The question is no longer *whether* to manage organizational knowledge but *how* to maximize the utilization of available resources to achieve higher performance. Universities and research institutes constitute social,

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academic communities that play a vital role in creating and transmitting scientific knowledge, which is the fundamental source and driver of societal progress as well as development through improving the innovation eco-system (Rodríguez-Soler & Brunet Icart, 2017; Tian et al., 2009). There is little research on knowledge sharing in an academic organization for adult learners offering job market demand-oriented short courses and training, such as a continuing education center. The increased demand for new skills-oriented short courses and training motivated us to study how the traditional Center for Continuing Education can improve its performance through knowledge sharing utilizing information and communication technologies (ICTs) and organizational soft management approaches. The novelty of the research theme and multi-stage analysis requires an in-depth analysis of various functions and their collaborations and knowledge sharing. The case study method was undertaken to explore knowledge sharing within the organization and with third parties. The traditional Centers for Continuing Education (CFOO[1]) need to improve their performance to face the increasing competition from all kinds of Massive open online course (MOOC) and offline providers of similar services, such as skills development, training, and short courses for professional development. Thus, improving the knowledge-sharing process in the organization that offers career development-related short courses would have a significant social impact and improve organizational performance. Knowledge sharing refers to providing task information and know-how to help others and collaborate with others to solve problems, develop new ideas, or implement policies or procedures (Wang & Noe, 2010,). We study the case of the CFOO, an independent organization that provides professionally oriented short courses, customized training for companies, and business-oriented courses. Operating in a context of globalization, extreme competition, and constant innovation, a knowledge-based economy requires an increasingly specialized workforce. It looks to CFOOs for innovative training and skills development services with a considerable demand in the market. The CFOO can cope with the increasing demands by focusing on managing its implicit and explicit knowledge. Based on the analysis of an existing unexploited knowledge reservoir, this study aims to offer systematic and organized use of organizational knowledge for survival in a competitive environment. An organization needs to understand how knowledge is created, shared, and used within the organization to capitalize on the value of knowledge. This study focuses on how knowledge sharing takes place and can be improved at a basic level, such as among employees. This study explores how internal knowledge users can collaborate and share knowledge to enhance their service delivery to prospective clients. The study highlights the use of information and communication technology (ICT), making it flexible in communicating and coordinating among employees and managers to share knowledge in the organization. ICT infrastructure has become part and parcel of most knowledge-intensive organizations, and integrating it with the organizational culture can create a sound foundation for knowledge sharing and group learning (Jennex & Olfman, 2006). Knowledge management is a multidimensional phenomenon that requires a thorough approach to get to the heart of the topic and understand exactly what is happening in an academic organization's knowledge management processes. This multidimensionality led us to choose the case study methodology to explore the knowledge management processes at the CFOO. The case study is an interesting method, especially when the question of the study is requested in the form of what is happening (Bouma & Ling, 2006) and *how* to deal with it? Indeed, the case study approach allows us to exploit the advantages of the deductive process and those of the inductive method to produce knowledge.

The rest of the paper is organized as follows. We present an overview of the CFOO, then provide the literature review. The next two sections present the research design, validity and reliability, and findings, respectively. Then we discuss the case analysis findings and classify them into four important factors concerning knowledge sharing in academic organizations. Finally, we present the managerial implications that are followed by the concluding remarks and directions for future research.

THE CENTER FOR CONTINUING EDUCATION (CFOO) AND KNOWLEDGE SHARING

We can consider the Center for Continuing Education a knowledge-intensive organization as it provides different skilled development services to its clients. However, in an era of globalization, the rise of online providers, and massive open online courses (MOOC), the CFOO faces increasing challenges in the marketplace and needs strategies to overcome those challenges. This study aims to see how knowledge-sharing and integrated information technology platforms can improve the efficiency of services provided by the CFOO. Thus, this study's approach is both emergent and engineering. The emergent approach focuses on the social dynamics between employees and the nature of their daily tasks to accomplish their duties in the organization. On the other hand, the engineering approach focuses on management interventions or infrastructure of knowledge sharing in the organization (Van den Hooff & Huysman, 2009).

This study explored knowledge management issues in an academic organization, the CFOO, offering continuing education services. The knowledge management process in this kind of service organization differs from that of commercial organizations; predominant focus is the knowledge management literature. The CFOO offers various short education programs and training that help professionals to upgrade their knowledge and fill up some management and scientific gaps in several emerging economic sectors. The organization's main objective is to offer innovative skills development programs with increasingly high demand in the competitive marketplace. Over 100 employees, managers, and senior executives manage this education unit and deal with several hundred prospective adult learners monthly. The CFOO receives applications for existing short-term education programs or requests for new training programs for individuals or groups from firms. The business processes of the CFOO require collaboration and a perfect synergy between internal advisors, coordinators, and business partners. With market demand for a specialized product, accepting or rejecting a client's request requires several approvals from concerned people at different levels of the organization. This approval requires an effective exchange of information and collaboration among the various stakeholders. At least two levels of administrators receive those requests and analyze them. In the current context, despite integrating ICTs, knowledge-sharing, and collaboration of employees in different departments and levels remain at the minimum because of both organizational structure and culture, and they require improvement in cooperation to improve organizational productivity.

LITERATURE REVIEW

Proper combinations of knowledge create capabilities that lead to higher performance of an organization. With the rise of ICT use in organizations; knowledge management, knowledge sharing, and knowledge transfer have become easier among the knowledge actors. According to Chang and Lin (2015), Information can be electronically captured, saved, accessed, distributed, and retrieved for corporate decision-making with the help of ICT. Using ICT for knowledge capturing is a critical instrument for improving the efficiency of knowledge utilization and re-use by streamlining the processes of identifying, storing, classifying, and selecting required knowledge (Turban et al., 2004).

Using ICT improves the efficiency of knowledge utilization and gives flexibility in sharing and transferring knowledge among organizational users and external stakeholders. Nonaka et al. (2000) showed that an organization is a creative entity of knowledge. In this context, knowledge and the ability to create and use this knowledge capital effectively become an essential source for creating sustainable competitive advantage. According to Nonaka et al. (2000), the efficient utilization of knowledge and distinctive competencies enable organizations to innovate in terms of products, processes, and services or make more efficient use of the organization's existing resources. Knowledge sharing is increasingly considered a useful tool for organizational effectiveness and higher performance (Farooq, 2020; Quigley et al., 2007). Knowledge sharing among employees enhances the performance of both

public and private sector organizations (Silvi & Cuganesan, 2006). However, tacit knowledge is hard to transfer, and knowledge sharing depends on the willingness of the holder of the Knowledge (Lin et al., 2008) and explicit knowledge can be transferred/shared using various tools and a face-to-face interview. The study of Agrawal et al. (2021) discovered that information and communication technology (ICT) had a significant beneficial impact on the success of knowledge management adoption in a business (Tahleho & Ngulube, 2022).

An extensive body of research (Al-Azad et al., 2022; Ipe, 2003; Seonghee & Boryung, 2008; Shoham & Perry, 2009;) has attempted to analyze the significant factors that influence knowledge sharing. According to research on organizational culture by Samra et al. (2009) and Sultana et al. (2013), the degree of trust, honesty, and justice are the characteristics that represent the best organizational culture. A conducive culture can enable the sharing and exchange of knowledge among organizational users to flourish. Kim and Lee (2006) studied the impact of corporate culture and information technology on employee knowledge-sharing capabilities. Titi Amayah (2013), Hall et al. (2022), and Alvarez and Torrecillas (2020) found that enablers, like social interaction, rewards, and organizational support, significantly affect knowledge sharing. The knowledge generation process, followed by information exchange, is mostly influenced by organizational culture (Adeinat & Abdulfatah, 2019).

Landry et al. (2006) and Jennex and Olfman (2005) presented several valuable models to understand how knowledge is created throughout the value chain. Such models can depict how knowledge passes through the stages of mapping/acquisition, creation/destruction, integration/transfer/replication, and destruction toward the end of the value chain, which is the innovation/performance stage (Kimiagari et al., 2015; Thompson et al., 2009). This value chain process is essential for understanding how the organization produces and shares knowledge. This model helps to decode elements of knowledge management. Although there are several examples in the literature of success in implementing knowledge management, organizations face significant challenges (Alavi et al., 2005; Gold et al., 2001). We find challenges in each factor that Roy and Rivard (2005) identified as part of their integrated knowledge management model. Consequently, it is imperative to analyze each element in the implementation stage of knowledge management. Many studies (Alavi & Leidner, 1999; Kim, 2007; Lin et al., 2005; Moteleb & Woodman, 2007) have described the lack of analysis of factors that might affect organizational knowledge management. Ardichvili (2008) highlighted that those motivational factors (personal benefits, community well-being, and normative considerations) affect the willingness to share knowledge with others. According to Razmerita et al. (2016), knowledge-sharing drivers are multiple. Some people just enjoy helping others, and monetary rewards, management support, change of knowledge-sharing behavior, recognition of barriers that change behavior, lack of trust, and lack of time motivate others.

RESEARCH DESIGN AND METHODS

This qualitative research based on the case study method is an exploratory study. The absence of Large-scale quantitative data led us to use the qualitative research method to understand what is happening and develop a new theoretical understanding (Christensen et al., 2002; Gephart, 2004; Glaser & Strauss, 1967). Moreover, Stuart et al. (2002) argue that the qualitative study is for understanding and preliminary theory development and the refutation of or extension to existing concepts and models because of their rich observational capability. According to Thietart (2003), there are three types of explorative research: i) theoretical exploration; ii) empirical exploration, and; iii) hybrid exploration. In our study, we have adopted the third approach. Hybrid exploration brings together both theories and observations. In this context, the researcher depends on the existing literature to make sense of data that can lead to new concepts and models.

Regarding data collection, for this qualitative research, we used the method of a face-to-face interview with at least two to three persons from each hierarchy level of the organization using an

interview guide. Since we did not want to influence the participants, we asked open-ended questions (Schuman and Presser, 1979). Open-ended questions allow collecting data on an individual's or group's perspectives, feelings, opinions, values, attitudes, and beliefs about their personal experiences and social world, besides factual information (Saldana, 2011). To improve the understanding of the questionnaire and ensure that our prospective respondents understand it, we have done a pilot test with five respondents and evaluated their responses to confirm whether they understood the questionnaire. The interview guide comprises open-ended questions (Annex 1 & 2) on knowledge management. We conducted the interviews, each lasting from 90 to 120 minutes, during November and December 2016. The employees could speak freely, making this method very efficient. During the interviews, we often crossed the pre-established boundary of our discussions. Thus, we have assimilated other information about the importance of knowledge management in organizational strategy and knowledge sharing within the organization. We have also collected documents from the organization where our respondents are affiliated.

Moreover, we have consulted newspapers and other publicly available documents to find related news, articles, and other documents. The multiple data sources helped us establish triangulation at the data collection stage. We have also followed three stages of data analysis recommended by Creswell (2003). The three stages are i) data combination, according to the data source, helping check collected data and decide whether there is a need for additional data; ii) making sense of data by highlighting the broader threads of the data; and iii) coding process.

We transcribed the interviews into an Word verbatim, and we performed the content analysis on both the interview verbatim and the publicly available documents of the CFOO.

The collected data were coded and aggregated into categories according to their similarities and differences (Thietart, 2007). We have also coded transcripts of "other publicly available documents" collected from the focal organization and other sources. We then drew relationships between the various categories to understand the information we collected using QDA Miner software (version 4.0.4). Finally, we have followed the process developed by Jones and Alony (2011).

The purpose of the content analysis was to provide knowledge and understanding of the phenomenon (Downe-Wamboldt, 1992). For Hsieh and Shannon (2005), qualitative content analysis is a research method for the subjective interpretation of the text's content through systematic coding, classification, and identifying themes or patterns. Content analysis is a grounded theory analysis method which enabled us to establish embedded information through textual analysis (Legros et al., 2013; Sultana et al., 2013). Eisenhardt (1989) highlighted the benefits of multiple data collection methods to provide evidence of synergy and triangulation. It is accepted that qualitative research does not always lead transparently to a conclusion (Bouma & Ling, 2006). Therefore, we ensured the description and interpretation of data. We recorded the conversations and made transcriptions after each interview. This multi-method of data collection allowed us to recap the data better and triangulation the data.

Our research made a significant connection between knowledge management and CFOO organizational strategy. We found that we could align knowledge management objectives with the organization's strategic plan objectives. However, to analyze this systematically to assess how knowledge management influences the organization's activities, we must pursue research by analyzing business processes.

As the organization has not adequately or systematically re-engineered business processes to improve performance using information technology, work processes remain in employees' minds (tacit), are inadequately documented, and may be optimized inconsistently and ineffectively. First, this implies a lack of efficiency in terms of performance and, second, an opportunity to integrate knowledge management with business processes to improve processes themselves.

We used the six stages identified by Smith and McKeen (2003) that bring a knowledge management perspective into business process design. Concerning the organization's critical processes, the study

considered the concepts of knowledge management and its multidimensional characteristics. Besides, the study considered the views expressed by interviewees at various levels of the organization.

Teaching and skills development courses and training offered by the CFOO are based on the university's available expertise, both undergraduate and postgraduate levels. As the CFOO serves diverse client groups, its challenges are relatively high. For example, a student who wants to continue his or her studies, an employee who desires improved skills, or an older adult interested in a specialized program is all looking for quick responses to their needs and effective training offerings. Therefore, critical processes related to the CFOO's core activities are analyzing admission applications for courses or training programs and monitoring business prospects. The admission application analysis process in the current situation involves two sub-processes deployed at two levels (see Figures 1 and 2).

In the first level, the admission application undergoes a preliminary analysis to determine the next level of analysis to obtain a decision. This process is managed by a reception secretary or a similar administrative assistant, a first-level knowledge management player. The first level analysts evaluate the file in terms of established rules and requirements and transmit it to the next level for more rigorous analysis.

We analyzed the client request in the second level to decide on training planning, execution, and monitoring. A training consultant manages the second-level analysis process and a second-level knowledge management player. The second-level analysts have more discretionary power in terms of the evaluation of application files.

The application analysis process steps are as follows: receiving applications/requests by phone, e-mail, or in person and requesting preliminary analysis based on a telephone interview with the

Figure 1. The first-level process—admission application process preliminary analysis

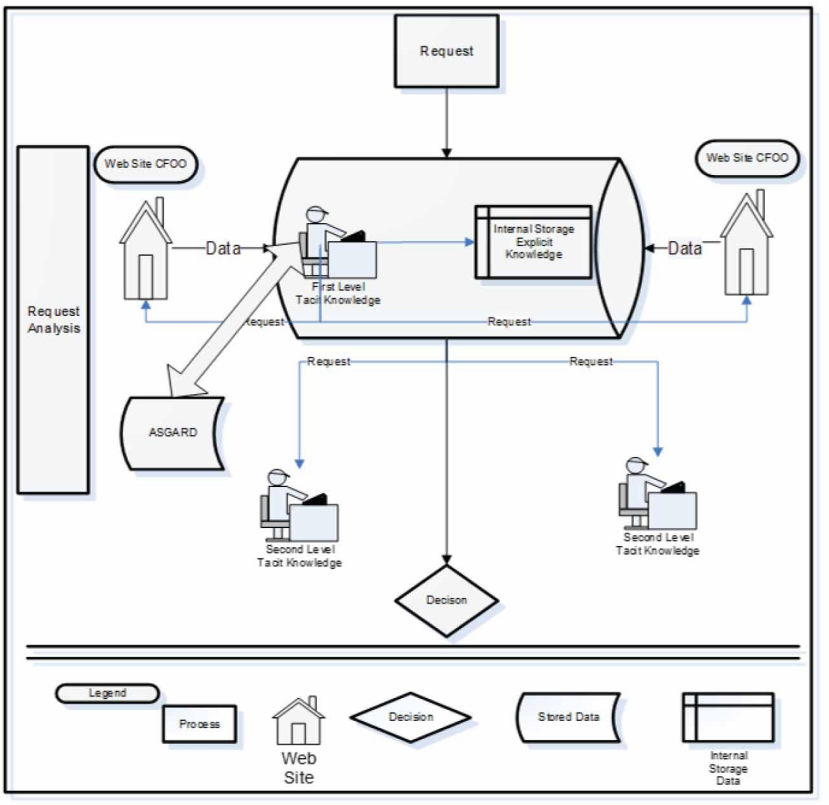
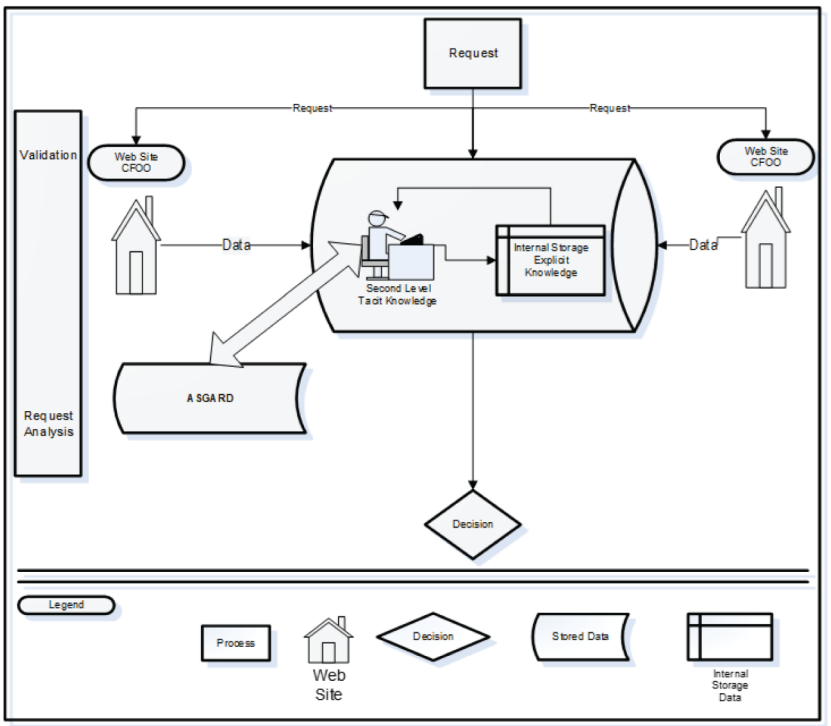


Figure 2. The second-level process—analysis of the process: current situation



applicant to understand the client's needs. The preliminary process analysis diagram is based on answers to the qualitative questionnaire presented in Annex 1. In the first-level analysis, knowledge management players systematically ensure necessary data/information, such as the kinds of courses/training requested, timing, and whether the training is for individuals or groups. Following the preliminary analysis of the applicant's needs, the client is directed to the second-level analysis and, after that, to the CFOO faculties for training courses, credited with specific units of credit. The second-level process is depicted in Figure 2.

The process associated with the second level roughly follows the same steps as the first level with two differences: first, the receipt of applications is identified as a step belonging to the first-level preliminary analysis and is replaced by a validation action in the second-level analysis, and second, the admission application analysis is a more complicated process. In this level, knowledge management actors verify the availability of expertise required to reply to the client's request, consider the possibility of integrating the request for courses/training within existing programs or evaluate to introducing new programs, undertake cost–benefit analysis, forecast future demand of services if it is a new course or training program that needs to be developed, and analyze competitors' offerings.

Empowering the first-level analysts through knowledge sharing and creating a conductive organizational atmosphere where first- and second-level analysts can share their knowledge and understanding with the use of ICTs and information systems can accelerate and streamline the evaluation process.

Business intelligence and market monitoring allow continuous innovation and management, which improve the organization's ability to anticipate the future and identify new business opportunities. An organization must invest in observation, collection, analysis, and synthesis of information from internal and external networks and focus on disseminating findings from processed data that is useful for the organization. Business intelligence and market monitoring should lead to actionable knowledge. An

information overload phenomenon is present in the organization; subsequently, its managers deem it necessary to move to systematic monitoring. In fact, the current CFOO situation is characterized by information overload and partial obsoleteness without being filtered by a continuous information updating process and the organization's external network.

Like the business intelligence process, the knowledge management process can be divided into sub-steps or sub-processes. Before the start of our research, there was no organized knowledge management process for organizations. Therefore, we had to decode the organizational process by analyzing the knowledge and understanding of the organization held by the individuals who participated in our interviews.

Validity and Reliability of the Study

In conducting a qualitative study, meeting the reliability requirement can be challenging because interview respondents could change their views over time. Therefore, finding the same results in similar research on different periods of time in different organizations in terms of different contexts, objectives, and processes is quite an inherent challenge. An interview guide was used for a semi-structured interview with the employees of the CFOO, and interviews were recorded and transcribed verbatim with the utmost care. To ensure validity and reliability, we used multiple sources of data (verbatim and documents from publicly available sources) (Patton, 1990). We trained three coders who coded verbatim and prepared from collected data from several sources. We have then compared the two coder's coding with that conducted by an author of this study. The process shows that in over 84.5% of cases, there were similarities between codes developed by the two coders. They were provided adequate training on coding and research topics, which facilitated a better understanding of the coding process, reflected by approximately 85% similar coding. We have also instructed coders to keep aside the text where they have doubt or find it difficult to code during the first round of coding and go back to coding those parts once they have completed the first round of coding. This process has contributed to improving the validity of the coding process. We assessed reliability informally during the coder training and kept assessing during the actual coding. We then cross-checked the results, and last, we compared them to existing literature. We offered the respondents copies of the results to thank them for participating. Moreover, we generated and saved a database of the data collected and its findings (protocol description, questionnaire, verbatim, online documents).

Yin (2013) stated that reliability is used to minimize errors and bias in a study. It is impossible to achieve internal validity without reliability. Stronger internal validity increases reliability, making it essential to focus on this type of validity. However, according to Merriam (1998), some factors can ensure reliable results. One is triangulation. Our approach is based on multiple methods (focus groups, interviews, and content analysis) and publicly available documents. Our methods of data collection and analysis increase reliability and internal validity. Another strategy Merriam (1998) mentioned is the interviewer's position, by which the researcher should clearly explain the theory and assumptions behind the case study, the researcher's position to the study group, and the social environment in which the data were collected. All these issues were carefully respected. Finally, the verification process has been undertaken; the researcher explains how the data were collected. In general, the reliability target is to reduce the risk of errors in the proposed research project. We have met these criteria throughout this research project.

FINDINGS

The market for specialized short-term courses, programs, and training is in high demand as businesses experience accelerated transformations due to heightened technological advancement, digitalization, and globalization. The Centers for Continuing Education or Knowledge-intensive business service (KIBS) organizations need to continuously monitor dynamic market trends.

Technological infrastructure is one element that usually supports knowledge sharing. It seems extremely important to consider technology as a support tool in knowledge sharing, and the CFOO is lacking in effectively using ICT technologies. Through interviews with employees of the first and second levels, we observed that there is little exchange of information and sharing between these two levels of employees who deal with applications or requests for particular courses or training. Furthermore, first-level employees had no access to information on the expertise that the CFOO can offer internally or in collaboration with other faculties, institutes, or external partners. First-level knowledge employees lack empowerment, although they are likelier to share their knowledge with second-level knowledge employees. Second-level employees are less inclined to share their knowledge with first-level employees but more with their peers and higher management.

The CFOO lacks a systematic knowledge management strategy to capture, share, and integrate knowledge within their environments and organizational culture to foster interaction among employees of different levels and departments. Both formal and informal connections among individual employees and knowledge-sharing activities depend on the type of knowledge, namely, implicit, explicit, and personal knowledge, necessary to implement in the organization. Thematic coding of content analysis of interview transcriptions, internal documents, including annual reports, strategic plans, and external publications, suggests that knowledge sharing in this large organization depends on perception, the reward system, trust communication, collaboration, and technology infrastructure (Roy et al., 2014). Human factors are much more important than technology and infrastructure, although those are also essential. The success of knowledge-sharing implementation is highly influenced by organizational culture, knowledge-sharing process, and organization.

Furthermore, this strategy is most often started by significant organizational culture changes from its formalization to include elements that ensure it can promote knowledge sharing and trust between members of the organization. Perception and reward systems seem to be the most decisive in positively influencing knowledge-sharing factors. However, other factors, such as trust, openness to communication, and collaboration with the efficient use of ICT infrastructure, were considered important to the success of knowledge sharing.

Based on our study, we can develop the following three propositions:

Proposition 1: Knowledge-intensive organizations must continuously scan their market trends to keep the evolving market demands and prospects updated. Being updated on the market needs and developing strategies accordingly lead to higher performance of these organizations.

Proposition 2: Knowledge-intensive organizations need adequate organizational infrastructure, including ICTs and Information Systems (IS), to collaborate, share, and determine organizational and market information in real-time, accelerating their organizational process and improving their performance.

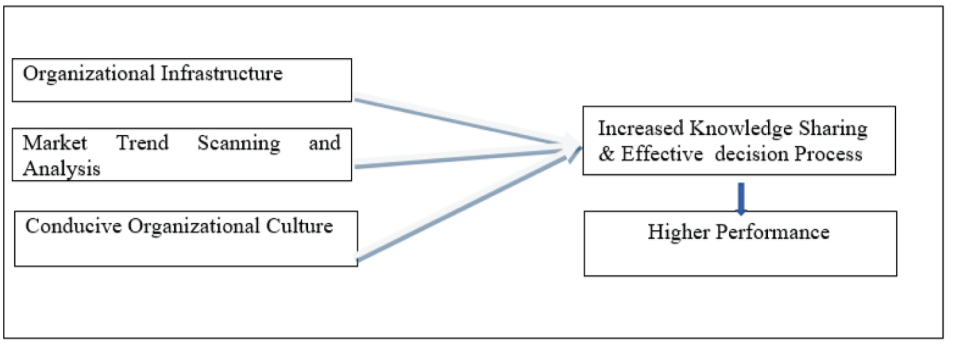
Proposition 3: On top of the ICT and IS infrastructure, the knowledge-intensive organizations need to create a conducive organizational culture of trust and collegiality to share and collaborate among the stakeholders to offer better and unique services for higher performance.

Our propositions lead us to propose the framework, Figure 3, for the higher performance of the Center for Continuing Education service providers:

DISCUSSION

Based on the organizational findings and analysis, we found that the CFOO has adequate ICT and human resources to take advantage of those knowledge resources by identifying them and using them to create new knowledge. To that end, organizations should focus on developing knowledge-sharing policy to improve awareness of the importance of knowledge-sharing and present it as a common goal for the organization. However, that will require a conducive organizational environment that

Figure 3. Organizational context, knowledge sharing, and higher performance



can create an organizational culture of collaboration and trust, fostering creativity and innovations in knowledge sharing and use. This environment will eventually reduce the time for decision-making processes and lead to improved productivity and collaboration. Besides, good knowledge management offers the possibility of being more flexible, as the organization needs to reply as quickly as possible to admission applications and changes in the market conditions. We have presented our analysis and recommendations from four perspectives: organizational culture, organizational change, technology, and human resource (HR) strategy. These solutions are mentioned in order of importance for implementation in the CFOO to improve its competitiveness in a market, such as offering adult education services. We have also presented those propositions graphically in Figures 4 and 5.

The CFOO needs to work on its *organizational culture,* which fosters collaboration. More precisely, the CFOO should: a) develop a mission with the participation of staff and unify the efforts of all the employees to make the CFOO receptive to everyone's ideas; b) establish a high level of trust among members of the organization and identify key people who have essential knowledge within the company; c) allocate time to knowledge management, establish the recognition of knowledge sharing, and implement a standard system of rewards; and d) develop socialization (*tacit to tacit*) using exchange that must be performed verbally during meetings and using observation, appropriate technology to facilitate and enhance knowledge management use groupware (collaborative work), and forums, developing an intranet and systematic business intelligence that facilitate creation and sharing of explicit knowledge.

The CFOO should work on *organizational change,* thereby focusing on: a) a change implementation plan to facilitate access and dissemination of knowledge in order to innovate and perform; and b) communication plan implementation in order to explain to employees the knowledge management objectives and its benefits. Organization should invest in supporting knowledge management infrastructure, both physical and soft infrastructure, such as appropriate and relevant technology and establish a flexible communication system across the organization so that knowledge employees can share their thoughts and also can get feedback from the top management about the objectives and specific goals of knowledge sharing. Organizations must demonstrate that knowledge sharing is an important strategy in their drive to achieve their competitiveness.

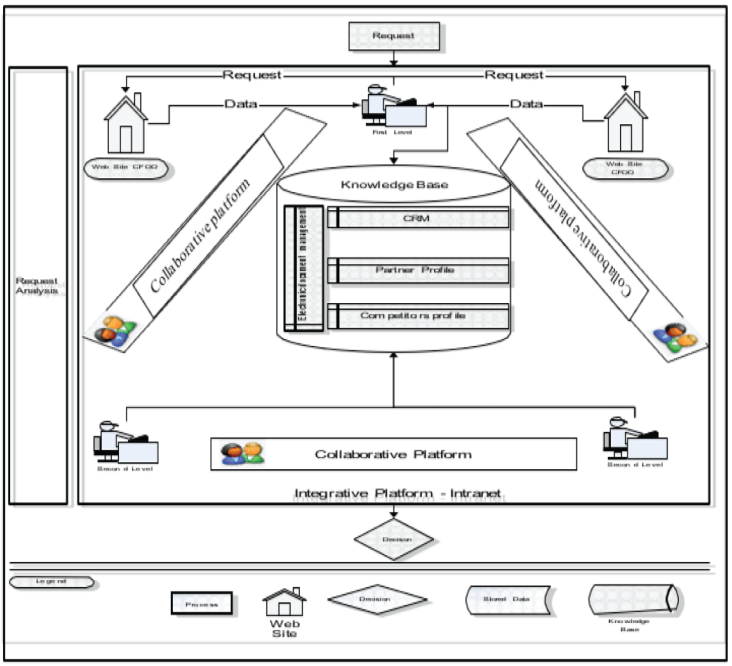
In addition, the CFOO needs to focus on *technology* infrastructure, as follows: *a)* intranet use to facilitate communication, exchange, and sharing of information within the organization, b) use of a system of customer relationship management that can meet customers' expectations by offering customized packages that best suits their needs; c) use of an electronic document management system, which provides the ability to save, identify, and track document movements; and d) use of an intelligence decision support system (SAS) that allows data integration, business analytics, and intelligence storage.

The CFOO must focus on HR strategy and implement it through the following actions: a) establishing a replacement and retention strategy; and b) benchmarking to compare the CFOO's working methods with their competitors. A business intelligence system could develop resource skills in this area by creating new networks and knowledge. Organization should promote collaborative work environment and processes, and reward knowledge champions. Performance and rewards can be developed based on employees' contribution to knowledge sharing and trust among the organization's members for a smooth collaborative work environment.

We propose a knowledge management process in the organization. The future situation radically changes the picture of knowledge at the first and second levels of analysis. The content analysis clearly shows the need for an integrated platform with a common knowledge base, collaborative platforms between the first- and second-level employees, and real-time access to databases and updates through an electronic document management system and electronic directories for clients, partners, and competitors. An intranet that joins all these components in an integrated platform accompanied by a collaboration eco-system and tools is necessary to facilitate knowledge management sharing (Balmisse, 2005). Our study shows that the organization needs ICT infrastructure, organizational promoting, and programming for effective knowledge creation and transmission. However, neither of them alone can fulfill the need for knowledge sharing.

Our analysis leads us to recommend that the CFOO radically change the knowledge mapping associated with the organization's first- and second-level processes. The content analysis shows a need to share knowledge through a common knowledgebase and collaborative platforms. In addition, an electronic document management system with electronic directory categories (e.g., clients, partners, and competitors.) adds value to knowledge management in the organization. Besides organizational culture and organizational change, Figure 4 shows how the CFOO needs to prepare an integrated system in which first-level knowledge management players can access information and database of the organization through the utilization of ICTs and other information systems.

Figure 4. Proposed process: Integrated admission applications and analysis process

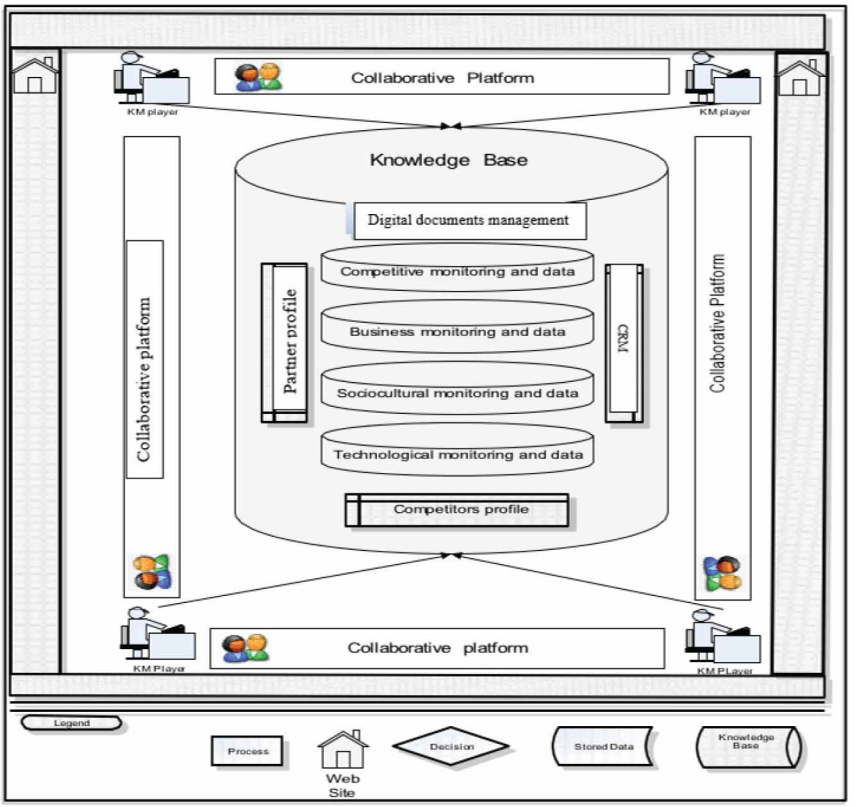


It is also clear that the business intelligence process and business monitoring are a powerful aspect of knowledge management that the company must implement in the short run. The customer is at the Center of organizational strategy, and the organization must implement specific strategic intelligence and business monitoring activities to retain customers. First, the organization must produce an inventory of competitors, trainers, clients, and partner profiles to refine customer relationships and reduce decision time. Then, the organization has to set up a monitoring newswire to identify the most effective technologies in training and development in the education market. Finally, the organization must be guided to use relevant and necessary information for strategic decision-making. Figure 5 presents our recommended structure for the future of the business monitoring process of the CFOO.

Managerial Implications

The study contributes to theoretical development by demonstrating that knowledge sharing requires an integrated technology platform and a conducive organizational culture for human interactions. This study's findings will enable senior managers to be aware of the importance of knowledge sharing in the organization and how they can create technological infrastructure and social dynamics to foster knowledge sharing among employees and managers. This process will lead to efficiency, productivity, innovation, and creativity. The proposed model will enable managers of knowledge-intensive firms to effectively capture, share, and re-use organizational knowledge and expertise. It will also help leverage staff expertise and create and share knowledge. A web-based system will facilitate tracking requests from clients, conduct data mining, and retrieve information in the organizational system to reply to clients' requests speedily. It is critical to have an open and collegial culture where knowledge sharing,

Figure 5. Proposed integrated process: business monitoring process



dialogue among the employees, and innovation are promoted. To that end, the top managers need to effectively ensure alignment among the people, processes, and technologies to support organizational knowledge management effectively.

CONCLUSION AND FUTURE RESEARCH

The case analysis led us to conclude that the CFOO must implement a systematic knowledge management strategy for knowledge mapping, knowledge gaps, and knowledge needs. This process could facilitate the development of a knowledge-sharing strategy for innovation and productivity. We observed the willingness for knowledge sharing among the employees during their interviews and their expectations about the state of the knowledge management environment in the organization. Based on the current situation and future expectations, we proposed implementing IT infrastructure (Figures 4 and 5) and a particular organizational culture to create a conducive knowledge-sharing environment. IT infrastructure can facilitate real-time knowledge sharing and enhance the productivity of both the individual who shares his or her knowledge and the receiver of the knowledge, the former by personal enjoyment, feelings of contribution to the organization, and recognition of his/her expertise for the organization and the latter by enhancing his/her capabilities.

We revealed that it is necessary to consider organizational culture, technology, processes, and organizational change when implementing knowledge management systems. Integrating the HR of all levels—from top management to first- and second-level knowledge players—into the knowledge management strategy is most important. Our findings are based on the fact that knowledge management within the CFOO must start with significant organizational culture changes. In the organizational process, it is necessary to include elements that promote knowledge sharing and trust between the organization's members. Among these factors, the company should establish recognition for knowledge sharing, support the knowledge management infrastructure with technology, and implement an organization-wide communication plan regarding knowledge management objectives and their specific results. In addition, the knowledge management policy needs to promote learning within the organization. The CFOO needs to know that there are several barriers to knowledge sharing, such as fear of losing power, lack of confidence, and lack of time, which must be overcome by organizational reform and introducing a trust-based management culture. The benefits for the organization are visible in the medium and long term. A conducive work environment and changes oriented to knowledge management in organizational culture can provide long-term results. Appropriate measurement of the knowledge management system can ensure that productivity increases. The organization is on a solid foundation for innovation and new knowledge in offering adult training and short-course services. At the same time, the decision-making process and quality management can be improved radically. The company maintains its assets by establishing procedures for transforming tacit knowledge into explicit knowledge that is easily transferable and will grow through new knowledge.

Beyond the application to the academic organization, this study has a few limitations. First, these findings must be interpreted with distinct parameters and cautions, as the sample adopted in this research is based on the context of the CFOO used in this case study. Consequently, the results are specific to academic organization and knowledge-intensive organizations and are not readily applicable to many other types of organizations in another environment. Second, this research is a cross-sectional study rather than a longitudinal study. Thus, it might not capture the perceptions of the knowledge-sharing behavior of trainees across time. Third, a major limitation of this study is that it is future-oriented and needs to evaluate the organization's knowledge management systems and processes following the adoption of knowledge management policies. Finally, this is a contemporary study and our findings are likely to hold for many years. Although the data were collected in 2016, before Covid-19, the analysis remains valid and becomes more important as Covid-19 changed how we work and share our knowledge and thoughts. Covid has accelerated remote working and will change the working culture and interaction among an organization's personnel. In a virtual environment,

we need even more than before to develop organization with a conducive virtual environment of collaboration and trust so that organizational members develop a willingness to collaborate, trust, and share with their peers across the organization. Knowledge management has become more relevant and imperative in today's business eco-system.

Qualitative research ultimately is both a process and a product in which the researcher is profoundly and unavoidably implicated (Sandelowski & Barrosso, 2002). Therefore, a qualitative study's findings are a subjective construction in which the researcher's knowledge, beliefs, and activities play a significant role, and findings are "unique social interactions." For this reason, qualitative research is not statistically but theoretically 'generalizable.' Future research could record and compare the experiences and cases of different academics to increase the generalizability of the findings. One or more tests among the Scott's (p), Cohen's kappa (k), and Krippendorff's alpha (a) can be used to improve the intercoder reliability (ICR). The human factor is important, which emphasizes the need for knowledge sharing in academia. We hope our study is interpreted as a call for future empirical research on knowledge sharing. The current evidence on the role of HR is primarily anecdotal, and empirical results would substantially enrich knowledge in this field. Furthermore, future studies must examine how personal and demographic factors, such as gender, size, country of origin, job position, and field of study, can affect the commitment to knowledge sharing in the academic environment.

DECLARATIONS

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ENDNOTE

[1] Acronym for Center for Continuing Studies and Training.

APPENDIX A: QUALITATIVE QUESTIONNAIRE - MANAGEMENT LEVEL

1. What is the mission of the organization and what is its structure? (Including the status, its offices, programs, departments, structure, etc.);
2. How do you describe the external environment (the business environment) of the organization? (e.g., Academia, competition);
3. What is the number of employees and their functions?
4. How departments or strategic directions of the organization work?
5. What happens in a training program?
6. What is the technological environment (intranet, website, collaboration tools, database servers, video conferencing platforms etc.)? Is it independent or outsourced? What is its role in the knowledge management strategy of the organization?
7. What are the elements of organizational culture and how values are conveyed inside and outside?
8. What are the sources of knowledge? How is it shared, created and explained?
9. What are the strategic directions of the organization (e.g., business strategy)? Are they independent or linked to other strategies?
10. What are the skills to develop, according to strategic directions of the organization and which strategies could facilitate the development of targeted strategic skills?
11. What is the context or the current strategy of knowledge management in the organization? Are there already strategic practice communities, e-learning system, virtual teams, mentoring or coaching system, video conferencing, discussion forums, etc.?
12. What is its weight (knowledge management) in the strategy of the organization? Is there a system of classification of knowledge (e.g., knowledge map)? What type of knowledge management? (e.g., tacit or explicit)
13. Is organization focused on a special business process (e.g., a training program) for which knowledge management is critical?
14. What percentage of the budget is allocated to the management of knowledge or training? Are these training activities (e.g., for beginners, mentoring, coaching)? How are they managed?
15. Who are the key people who have the skills and critical knowledge of the organization?
16. How tacit knowledge is created within the organization?
17. Is there a HR strategy for the organization? What are the main directions of the retention policy (e.g., short-term) and staff retention (e.g., long-term)?

APPENDIX B: QUALITATIVE QUESTIONNAIRE - MANAGEMENT AND OPERATIONAL LEVEL

1. What are the stages of the process if the process is decomposed?
2. What is the information in each step of the process flow? What is knowledge do we need?
3. Tacit or explicit? Routine or non-routine (specific items)? Where is this information? Which are the key elements of decision?
4. What is the unique expertise that you consider to hold for this service? This unique expertise could be explained and how?
5. Can you mention the difficulties that you met during your career that is common in this stage of problem?
6. What solutions have you found to solve this problem?
7. What are the strengths of your service? How can we measure the success of your service?
8. What are the weaknesses of your service? How could size a failure in the service?
9. What you link the successes and failures of this process step?
10. What recommendation would you make to improve your successor in process?
11. What are the most difficult skills to develop in this stage?
12. What are the strategies to promote the development of these skills?
13. What is your future vision for this service?

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