

Comparative diagnosis of knowledge management in public and private universities

Diagnóstico comparativo de la gestión del conocimiento entre las universidades públicas y privadas

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ABSTRACT:

The purpose of this research is to conduct the first evaluation of knowledge management practices in universities of Guayaquil in order to determine differences between public and private sector. The methodology follows a quantitative paradigm with descriptive scope and cross-sectional nature. A non-experimental survey method was applied to all faculty directors. Results show there are no significant differences, although public universities have less resources and show higher motivation to knowledge management.

Keywords: Knowledge management, critical success factors for KM, implementation models of KM, Ecuadorian universities.

RESUMEN:

La presente investigación tiene como objetivo realizar una evaluación inicial de las prácticas de gestión del conocimiento en universidades de Guayaquil y determinar diferencias entre el sector público y privado. Se aplica una metodología cuantitativa de alcance descriptivo y de corte transversal, con una encuesta no experimental aplicada a los directores de carrera. Los resultados revelan que, el sector público percibe mayor carencia de recursos, pero demuestra una mejor motivación hacia la gestión del conocimiento. No muestran diferencias significativas en los procesos, pero en aspectos de cultura, liderazgo, tecnología y medición del desempeño difieren sus resultados.

Palabras clave: Gestión del Conocimiento, Factores críticos para GC, Modelos de implementación de GC, Universidades ecuatorianas.

1. Introduction

In the last two decades, globalization has caused organizations in any region to remain in search of competitive advantages as a means of differentiating from their rivals. Organizational competitiveness in contemporary management is based on physical and tangible resources, and efficient management of knowledge generated by its collaborators

and deployed in its operations, as well as production and services offered. Knowledge management has become an integral activity that generates value for the products and services that a company offers, and a means to innovate and be competitive in a knowledge-oriented economy.

Knowledge economy requires universities as entities that promote the development of knowledge in society and the applicability of management strategies that generate sustainable competitiveness in the productive sector. Universities are complex organizations composed of autonomous units but which are united by challenges of massification and fulfillment of an emerging accreditation of careers applied by the government, as well as by being oriented towards globalization, use of information and communication technologies, student satisfaction, and development of a knowledge society. This motivates professionals and academics to design models for their implementation, strategic management and evaluation of knowledge assets.

For the implementation of knowledge management to be successful, the literature suggests considering certain critical success factors referring to the resources, skills and attributes of an organization that are essential for success in the market (Lynch, 2003). Downes (2014) proposed a list of 10 factors that includes aspects of leadership and commitment of senior management, organizational culture, technological infrastructure, organizational structure, processes and activities, strategies, training programs, motivation and incentives, human resource management, and performance measurement. This set of factors varies according to the context in which it is applied, available resources and organizational needs in relation to knowledge (Wong, 2005).

A relevant factor for knowledge management processes in a university context is culture. As expressed by Cranfield (2011), an appropriate organizational environment can facilitate the acceptance of the use of tools that help to manage knowledge. The author also suggested focusing on processes that improve individual and organizational capacity, motivations and opportunities to learn and generate positive results. According to Stankosky, as cited by Laal (2011) and Cranfield (2011), there are four pillars in the field of higher education: leadership, organization, technology and learning.

There are few studies applied to higher education institutions in the public sector, especially in universities. Among them, the work of Peluffo and Contreras (2002) is highlighted. They recommended making a prior diagnosis of knowledge management practices to assess the state in which they are implemented and generate guidelines appropriate to organizational needs. Among the diagnostic tools, the authors proposed KMAT (Knowledge Management Assessment Tool), which considers five relevant aspects in any organization: leadership, process, culture, technology and measurement.

The literature still requires a common and reliable understanding of knowledge management in universities. A systematic, exhaustive and exploratory vision is needed (Kalkan, 2017). On the other hand, previous studies propose to evaluate the current situation of knowledge management practices, mainly in aspects of leadership, technology, process, culture and measurement. Therefore, the analysis of the practices used in public universities in the city of Guayaquil is proposed, and if they differ from those used in the private sector.

1.1. Literature review

Since the middle ages, universities have been qualified as vital organizations for the development of a society, monopolizing the production and legitimization of knowledge. However, after the Second World War, they lost power due to the appearance of new knowledge generating actors (Denizhan, 2017). However, these entities continue to be a key part in the generation and transmission of knowledge, and even stronger than before due to greater challenges in a highly competitive world. Consequently, knowledge management becomes the promising tool to face these challenges.

Followingly, literature review is described to determine the relevance of higher education in the new knowledge society. The discussion in the public sector is focused on determining the factors and barriers that impede the implementation of knowledge management practices.

Finally, tools proposed by certain authors are reviewed to diagnose the current state of the usual practices to efficiently manage knowledge.

1.1.1. The importance of higher education in the society of knowledge

Higher education in Latin America has distinguished itself by following the guidelines of the French or Napoleonic model created two centuries ago. Its objective was to train professionals with the required profile of a bureaucratic state newly formed by Napoleon. Under this assumption, Mora (2004) concluded that Latin American universities are part of the state administration and are designed to respond to a labor market characterized by well-defined and stable professions, whose skills do not vary throughout time.

However, globalization of higher education requires addressing the fact that graduates frequently work in transnational or international companies with global methods of work, organization and operation (Mora, 2004). Universities must respond to a competency-based training that no longer satisfies only an immediate environment but an international one, with a strong demand for research and innovation skills.

Educational entities are essential in the lives of people and the sustainable economic growth of nations. Its central objective is to equip the workforce with appropriate skills, encourage innovation and support the productivity of organizations (Cranfield, 2011). The changing academic environment and its radical and discontinuous demand constitute the new mandate of creation and implementation of knowledge (Raj Adhikari, 2010). With such responsibility, the institutes of higher education have begun to change their teaching and research methods and focus more on customer satisfaction since high costs of university education raise the expectations of the student body.

Analysts recently universally recognized the economic value of higher education during the second half of the 20th century, when great technological development was evidenced (Mora & Vidal, 2003). A relevant factor was the availability of qualified human resources based on competencies, as well as the new source of knowledge generation: colleges. Fainholc (2006) concludes that the challenge of these organisms is to provide students with rigorous training skills related to cognitive and meta-cognitive strategies, coherent with higher thinking, solidary feeling and continuous self-monitoring action.

Meeting the new challenges of the knowledge society requires universities to incorporate the fundamental how-to of cooperative learning in conjunction with the development of information and communication technologies. According to Benítez, Uriona, Varvakis, and North (2014), technology as support for knowledge management is increasingly important, and, therefore, integrating 2.0 applications is a current challenge. According to Mora (2004), the faculty of self-training must be generated in students so that they remain receptive to the technological changes that appear in their working life.

1.1.2. Knowledge management in the public sector

Generally, both public and private companies recognize that if they want to obtain a competitive advantage they must efficiently manage information to generate knowledge that accelerates decision-making in a constantly changing market. However, knowledge is an intangible measure of success on its implementation and management process. Hence, authors propose non-financial indicators (Wang & Yang, 2016). Hlupic, Pouloudi, and Rzevski (2002) concluded that the definitions of knowledge management in the literature reflect a practical approach, considering the contribution of knowledge to the effectiveness of the organization. The variable frequently related to knowledge management is organizational performance for both private and public companies (Hassan & Al-Hakim, 2011).

In the private sector, the relationship with organizational performance is measured through product quality, customer satisfaction, innovation capacity, productivity, profitability and performance with respect to competitors (Gessi, Nüske, Thesing, Allebrandt, & Baggio, 2017). The authors recognized that knowledge management improves product or service quality, innovation processes, and productivity, resulting in greater profitability and performance than competitors.

In the public sector there is scant evidence of empirical studies despite the fact that

organizations already recognize the need to manage knowledge to improve relevant issues of society using efficiently available resources (McAdam & Reid, 2000). Countries such as Japan, Finland and the United States have demonstrated the strategic application of knowledge, solving problems more dynamically. They execute three phases to manage knowledge: (1) determine the initial inventory of knowledge; (2) form the knowledge management function; and finally, (3) create and strengthen smart companies (Peluffo & Contreras, 2002).

According to Gessi et al. (2017), current governments are interested in moving away from the rigid bureaucratic model and adopting a new one, able to answer well informed and demanding users with greater agility and quality. A model oriented to the development of knowledge does not need to develop high technology, but to increase the capacity of people and institutions in the acquisition, generation, diffusion and use of knowledge more effectively (Peluffo & Contreras, 2002). Another factor to take into account is the size of the organization: the greater the size and complexity, the lower the probability of obtaining better knowledge. Raj Adhikari (2010) specifies that the size of the institutes of higher education is considerably greater than the original size when they were founded, which is reflected in a poor administration.

The literature gathers more empirical evidence from the private sector, while public universities are limited in terms of a short-term application of knowledge-oriented management change. Veer and Rowley (2017) point out eight enablers and barriers to implementation in higher education institutes: organizational culture, technology, rewards and incentives, leadership, industry-academy relationship, organizational structure, human resources management, and knowledge repositories. Gessi et al. (2017) highlight that knowledge management in the public sector has a broader scope than achieving high levels of organizational performance. It also includes the benefits to the society to which it offers its services.

1.1.3. Knowledge management diagnosis in universities

Previous studies which were focused on the diagnosis of knowledge management practices of higher education institutes refer to a set of critical factors for a successful implementation project. Raj Adhikari (2010) expressed that the ability of an organization to benefit from knowledge depends basically on the factors of technology, organizational structure and some specific tool to diagnose and manage knowledge. Peluffo and Contreras (2002) state that a diagnosis of the current situation within the organization must be made as a first step, since it will define knowledge needs and their management.

According to Cranfield (2011), one of the most relevant factors is the appropriate environment between people and procedures, which must be cultivated in the organization to increase the acceptance of the implementation of tools for knowledge management. The author suggested working on the perception that workers have about knowledge management, which is just as valuable as the history of the university and the nature of academic work. He mentioned other factors in which changes are required to implement knowledge management as strategies and policies that enhance knowledge, organizational culture, organizational structure, and technology.

Peluffo and Contreras (2002) collected tools to support the diagnostic processes and the measurement of results. They refer to KMAT as an assessment and diagnostic tool for knowledge management, which takes leadership, culture, technology, performance measurement and processes in account. They define leadership is a strategic aspect, how the organization defines its business and the use of knowledge to strengthen its critical competencies; culture refers to how the organization focuses and favors learning and innovation; technology analyzes how it equips its members so they can communicate easily and more quickly; measurement includes assessing Intellectual Capital; and processes refer to the steps through which the company identifies knowledge gaps and helps capture, adopt and transfer the knowledge needed to add value.

Previous studies show certain differences in the practices used by public universities with respect to private ones. Public universities have the most developed knowledge

management concept due to the continuous pressure to increase their efficiency, reduce resources and improve the quality of service (McAdam & Reid, 2000). Nawaz and Bodla (2010), who conducted a comparative study among the sectors, showed that while there is no significant difference in transformational leadership, there is one in transactional leadership, the public sector being the one which reflects a higher level.

Considering the process of knowledge management -i.e., creation, capture, organization, storage, dissemination and application- Ramachandran, Chong, and Ismail (2009) conducted a comparative study in public and private universities in Malaysia, concluding that respondents moderately execute certain practices and that there is a statistically significant difference between the sectors. Public institutions are not aware that the organization has a knowledge management program due to lack of communication of their strategies and efforts towards the development of knowledge.

In conclusion, universities compete actively for students who are well informed on the basis of price and quality. Consequently, they have the power to demand changes in the higher education model according to the demand of a knowledge-oriented society, characterized by globalization and the universality. Literature evidences certain differences in the practices and orientation of knowledge management between the public and private sectors, a hypothesis proposed in this study to be contrasted with the data collected. Emphasis is placed on making a diagnosis of the current state of knowledge management systems as a first step to achieve a successful implementation. There are diagnostic tools such as KMAT, most used for its simple structure, which was considered while gathering information.

2. Methodology

The study's main objective is to carry out an initial comparative diagnosis of the use of knowledge management practices between public and private universities in the city of Guayaquil. A quantitative paradigm is followed for a non-experimental research design, since the intention is not to manipulate variables but to measure the difference between variable values in two independent samples. The data were collected in the field of study in a transversal manner. The scope is descriptive, establishing precisely the type of practices that are used in the universities of Guayaquil.

2.1. Population and sample

The unit of analysis used in the study was public and private universities of the city of Guayaquil belonging to the Higher Education System of Ecuador. A sample was taken by convenience of two public and two private universities, and a middle level official was selected for the collection of information, as suggested by AL-Hakim and Hassan (2012). Specifically, career directors of the different faculties of both sectors were surveyed, since they are directly responsible for the daily operation of their academic unit. The final sample was composed of 115 willing subjects.

2.2. The instrument

A survey served as an instrument for data collection since it is the lowest cost method when time is limited (Zikmund, Babin, Carr, & Griffin, 2012). The instrument for the diagnosis stage is KMAT, suggested by Peluffo and Contreras (2002), which consists of five factors. The questions were analyzed and adapted to the study context by a group of four experts in the field of social sciences, who considered 14 indicators to raise the initial diagnosis.

A five point Likert scale was used to measure the perception of use of knowledge management practices in the sample units, where 1 is no; 2, little; 3, something; 4, enough; and 5, plenty. The internal consistency was validated by Cronbach's alpha obtaining acceptable reliability with value equal .79: Values lower than .70 indicate a low internal consistency, while the preferred values are usually between .80 and .90 (Oviedo & Arias, 2005).

Table 1 shows the five factors with their respective measurement variables and codes used:

processes for knowledge management (P1 to P3), support and leadership of senior management (L1 to L3), organizational culture (C1 to C4), technological infrastructure (T1 and T2) and performance measurement of knowledge management (M1 and M2). The right column shows Cronbach's alpha calculated for each element when it is suppressed, all values are higher than .76, but none improve the total internal consistency of .79, so the 14 variables are maintained.

Table 1
Factors and indicators used to measure knowledge management

Indicators	Code	Cronbach's alpha if the element has been suppressed
There is a procedure to identify knowledge gaps.	P1	.76
The teaching staff constantly looks for innovation ideas.	P2	.78
There is a formal process of transferring good practices, such as documentation and research journals.	P3	.78
The main strategy of directors is to manage internal knowledge.	L1	.78
Management uses learning to support the main competencies.	L2	.77
Teachers are hired, evaluated and remunerated based on their contribution to the development of knowledge of the organization.	L3	.78
There is an environment that motivates and facilitates the sharing of knowledge.	C1	.78
There is a climate of openness and confidence among teachers.	C2	.77
Learning processes are guided with flexibility and a tendency to innovation.	C3	.78
Teachers are responsible for their own learning.	C4	.78
Technology favors the union among the teaching community.	T1	.77
Technology is accessible to teachers in order to create knowledge.	T2	.79
There are specific indicators to assess knowledge management.	M1	.77
Resources are designated to increase the knowledge base.	M2	.78

Data analysis was applied in two stages: (1) describe demographic behavior of the samples, and (2) determine the difference of knowledge management practices among them. SPSS software version 23 was used as descriptive statistics tools and for hypothesis testing.

2.2. Hypothesis

The purpose of the study is to determine the differences between knowledge management practices between public and private sector universities. With a significance level of 5%, typical in social sciences (Hernández et al., 2010), the next hypothesis is posed:

H1: There is a difference in knowledge management practices between public and private universities in the city of Guayaquil.

Ho: There is no difference in knowledge management practices between public and private universities in the city of Guayaquil.

3. Results

Participant characteristics of both samples taken in the field of study were described. Table 2 shows the frequency of occurrence and percentage structure of each category.

Table 2
Frequency and percentages of the population's demographic characteristics

Category Specifications	Total (%)	Public (%)	Private (%)
Male	69 (60.00)	40 (65.57)	29 (53.70)
Female	46 (40.00)	21 (34.43)	25 (46.30)
Teaching experience			
1 to 5 years	36 (31.30)	17 (27.87)	19 (35.19)
5 to 10 years	46 (40.00)	28 (45.90)	18 (33.33)
More than 10 years	33 (28.70)	16 (26.23)	17 (31.48)
Degree			
College	20 (17.39)	12 (18.46)	8 (16.00)
Masters	74 (64.35)	41 (63.08)	33 (66.00)
Doctorate	21 (18.26)	12 (18.46)	9 (18.00)
Sector			
Public	61 (53.04)		
Private	54 (46.96)		

60% of participants are male. This gender difference is notorious in the public sector, where men double women, yet there are similar proportions in the private sector. In regards to years of experience, almost 69% of career directors have more than 5 years of service in the teaching field, both in the public and private sectors. 64% of the participants have a master's degree, and the rest is divided into similar proportions in directors with a doctorate 18% and a university degree. Finally, the public sector has greater participation (53%), since the state university where data was collected offers a greater number of careers than the private one.

A search for atypical cases was conducted previous to the multivariate analysis. Standardized values were calculated verifying that all were below 1.50, ergo, no atypical cases were found. The Mahalanobis distance and its probability of occurrence was also estimated (0.92), confirming no atypical cases. Since there are ordinal categorical variables and the distributions are not normal, the Mann-Whitney U test was used to test the

hypothesis of two independent samples, as it is the nonparametric alternative to the t-student comparison of two independent averages (Silvente & Hurtado, 2012).

Table 3 summarizes the result of the hypothesis test to determine the difference in the use of knowledge management in its five dimensions. Using a significance of 5%, the decision to maintain the null hypothesis of the variables P1, P2, P3, L3, C1, T1, M1 is shown in the last column, because the bilateral asymptotic significance of the statistical test is less than the reference value, as well as the Z statistic is less than the value of 1.96 corresponding to the 95% confidence with which the contrast is made. A significant difference was found in other variables of knowledge management practices between public and private universities in the city of Guayaquil.

Table 3
Mann-Whitney U-Test for two independent samples grouped by sector

Variable	Mann-Whitney U	Wilcoxon W	Z	Sig. asymptotic (bilateral)	Decision
P1	1534.500	3019.500	-.657	.511	Ho is accepted
P2	1328.500	2813.500	-1.861	.063	Ho is accepted
P3	1589.000	3074.000	-.340	.734	Ho is accepted
L1	847.500	2332.500	-4.666	.000	Ho is rejected
L2	1324.500	2809.500	-1.985	.047	Ho is rejected
L3	1395.000	2880.000	-1.509	.131	Ho is accepted
C1	1578.500	3063.500	-.402	.688	Ho is accepted
C2	515.000	2000.000	-6.536	.000	Ho is rejected
C3	912.000	2397.000	-4.303	.000	Ho is rejected
C4	875.000	2766.000	-4.544	.000	Ho is rejected
T1	1553.500	3038.500	-.545	.585	Ho is accepted
T2	906.000	2797.000	-4.344	.000	Ho is rejected
M1	1445.500	2930.500	-1.171	.242	Ho is accepted
M2	764.500	2249.500	-5.179	.000	Ho is rejected

The hypothesis contrast indicates that there is no significant difference in certain knowledge management practices used between the public and private sectors, since the Z statistic values are lower than their critical value of 1.96, and their p-value is higher than the level of acceptance .05. These practices belong to the internal processes of knowledge generation, both in the procedures, search for innovative ideas and in the formal transfer of knowledge. Leadership is perceived according to both sectors that the teacher is hired, evaluated and paid based on their contribution to the development of knowledge of the organization.

There is an equivalent perception in terms of culture and technology that motivates them to share knowledge. Technology is seen as a means to favor the union of the teaching body.

Furthermore, due to the external evaluation by control bodies such as the Council for Evaluation, Accreditation and Quality Assurance of Higher Education, universities need to define indicators to assess management of independent knowledge, whether public or private.

Considering the rejected hypotheses, the universities differ in the use of the practices used in regard to the support and leadership of senior management. The public sector believes managing internal knowledge is partially a main direction strategy, while the private sector doesn't believe so.

The groups also differ in three aspects associated with the organizational culture: the public sector perceives a very open and trusting work environment, guided and flexible learning processes with a tendency to innovation, and the teacher's own responsibility for learning, while the private sector rates these aspects as low.

Another aspect in which a notable difference is perceived is in the resources allocated to increase the knowledge base. Public universities receive state funds for their projects while private universities must manage their own resources; therefore it is qualified as low.

4. Conclusions

Results show that there is a significant difference in certain practices used to manage knowledge between the public and private sectors. Organizational culture is the factor with outstanding difference, since three of four variables rejected the contrasting hypothesis. Strategies and activities proposed to manage knowledge are another significantly different aspect: public universities are more pressured to comply with management indicators to maintain a category of evaluation and accreditation of their offered careers established by the government control entities. Regarding processes, both sectors have similar scores, meaning procedures and activities to generate knowledge are similar.

Future studies could consider expanding the sample size to different institutions, both public and private. It is important to establish the cause-effect relationship between knowledge management practices and the benefits obtained from implementation. Furthermore, it is recommended to consider a longitudinal section of the study to determine if the pattern of behavior detected with respect to the practices employed is maintained over time and if they are not the product of maintaining qualified accreditation by government control entities.

The empirical contribution obtained from replicating this study in a larger scale will lead to robust results and to obtain a knowledge management model that may guide universities that wish to direct their implementation efforts to knowledge management and thus obtain optimal organizational performance in their processes.

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