Knowledge management in public universities in Brazil and Portugal

Gestão do conhecimento em universidades públicas no Brasil e em Portugal

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ABSTRACT

The objective of this research was to investigate which indicators facilitate or are barriers to Knowledge Management and which therefore behave as enablers or inhibitors of innovation and social effectiveness in higher education institutions in Brazil and Portugal, in the perception of managers in education. It is a quantitative study operationalized through a survey with descriptive purpose. Data were collected through questionnaires and their treatment was operated on electronic spreadsheets. The results showed that both the Brazilian and the Portuguese higher education institutions have a satisfactory performance in knowledge management, especially in the process of knowledge acquisition. However, the section that deals with knowledge assessment, and which is related to the strategic process, showed that the organizational strategy has not taken on the role of a learning process overtime, which can compromise innovation capability and social effectiveness of institutions in the future. Through this study, facilitating indexes and knowledge management barriers were identified in the public service of education in Brazil and in Portugal.
Keywords: knowledge management; higher education institution; comparative study.

RESUMO

O objetivo desta pesquisa foi investigar quais indicadores facilitam ou são barreiras à Gestão do Conhecimento e que se comportam, portanto, como capacitadores ou inibidores da inovação e da efetividade social em instituições de ensino superior do Brasil e Portugal, na percepção de gestores em educação. Trata-se de um estudo quantitativo operacionalizado por meio de uma pesquisa com objetivos descritivos. Os dados foram coletados por meio de questionários e o tratamento realizado em planilhas eletrônicas. Os resultados mostraram que tanto a IES brasileira quanto a portuguesa tem um desempenho satisfatório na gestão do conhecimento, notadamente no processo de obtenção de conhecimento. Contudo, a seção que trata da avaliação do conhecimento, relacionada com o processo estratégico, demonstrou que a estratégia organizacional não tem assumido a forma de um processo de aprendizado ao longo do tempo, o que pode comprometer a capacidade de inovação e de efetividade social das instituições no futuro. Por meio do estudo foram identificados indicadores facilitadores e as barreiras à gestão do conhecimento no serviço público de educação do Brasil e de Portugal.
Palavras-chave: gestão do conhecimento; instituição de ensino superior; estudo comparativo.

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1 INTRODUCTION

In times of great challenges, artificial intelligence, fast technological evolution and the need for more flexibility in order to adapt to emerging turbulences, organizations have become more and more concerned about how to manage their organizational knowledge in order to build new knowledge and promote qualitative transformations in the market and in society.

The use of knowledge as the main resource of the organizations finds support in the Knowledge-Based View (KBV), which is an extension of Resource-Based View (RBV), whose analysis treats the firm as an institution to create and integrate knowledge.

In this sense, Rodrigues and Gava (2016) and Masa'deh *et al.* (2017) suggest the inclusion of the educational system, represented by higher education institutions (HEI), into the core of the investigation on knowledge production and transfer, which will provide changes in the market and in society, and as an essential factor for the development of countries, since education institutions have knowledge as the main resource and there is a strong relationship between the level of schooling and the economic and social development of the countries (Unesco, 2010).

In this collection, González, Escudero, Nieto and Portela (2011) state that the accumulation of social capital in education institutions is only possible from a systematic implementation of processes and indexes which contribute to knowledge formation – Knowledge Management.

According to Wiig (2000), KM will be able to supply tools in order to help the social actors and the education organizations that are involved in the development process of the countries to mitigate their challenges, since knowledge management can increase the effectiveness in public services (Wiig, 2000) and create public value, that is, produce services and results, and create trust in the population (Batista, 2012).

To Inkinen, Kianto and Vanhala (2015) and Donate and Pablo (2015), the organizations' innovation capability is also meaningfully related to KM, for these actors emphasize that KM antecedes, favors or accelerates the organizations' success in innovation.

According to Batista (2012), KM in public administration must be turned to creating, sharing and applying knowledge in order to qualify social effectiveness. As a mean, social effectiveness involves a balanced dialogue among all the people at the heart of the community by generating actions of solidarity and education to meet the mutual challenges dialogically addressed by all the social actors involved in the process, and by trying to end the educational and social exclusion of students, families, schools and contexts (Álvarez, 2015). As an end, social effectiveness is linked to the results to be reached, to the beneficiaries, in the face of the execution of public policies (Batista, 2012), which, concerning this study, find locus in public education.

Thus, the question is: which indexes are facilitators and which are barriers to KM of knowledge from the perception of education managers and, which, therefore, favor or inhibit innovation and social effectiveness in higher education institutions in Brazil and Portugal?

The general objective of this article was to investigate which indexes either facilitate or not the barriers to KM of knowledge and which, therefore, behave as capacitators or inhibitors of innovation and social effectiveness in higher education institutions in Brazil and Portugal from the perception of education managers.

This is a relevant research, for, although scientific production about the nature of knowledge management and innovation in public service is growing, according to Serenko (2013); Serenko and Dumay (2015); Castro, Nodari, Brito, Silva and Santos (2018), this field is still limited, especially from comparative studies. Concerning the KM theme, this construct is still under a gradual growing process to which it becomes vital to contribute with studies for its consolidation as a reference discipline (Serenko, 2013), especially in the public education area. From the managerial point of view, this study will be able to foster paths on KM for the social effectiveness of the public institutions of education, extrapolating the national character of research on the topic. On the other hand, from the social point of view, the research will be able to promote the development of the organizations so that they become competitive in the knowledge areas of interest for the development of their nations, promote the improvement of their services in education, and intensify the capability to solve problems of governmental organizations.

2 THEORETICAL FRAMEWORK

The discussion on the KM role is sophisticated, since the model promotes and develops the organizational competencies in order to research, acquire, create, organize, share and transform knowledge with the objective to identify and explore a competitive advantage.

To Du Plessis (2007), KM is like a planned and structured approach to manage knowledge creation, distribution, acquisition and sharing.

On the other hand, to Bukowitz and Williams (2002); Brito, Oliveira and Castro (2012); Cardoso, Meireiles and Peralta (2012); Alegre, Sengupta and Lapiedra (2013), KM consists of knowledge processes, infrastructures (especially those highlighted by information and communication technology), cultural factors and knowledge capabilities (dynamic capabilities) which give support to and improve the organizational performance in the search for innovation and competitive advantage.

The publication of the KM Generations' board suggested by Serenko (2013), show that each research group (generations), since the first ones, around the 1990's, not only introduced new themes and methods but also kept the research guidelines previously established, from a techno-centric view of the knowledge processes to a generation highlighted by knowledge complexity and economy, which shows advancements in studies on KM in literature.

Thus, by considering this research's objective, the KM model suggested by Bukowitz and Williams (2002), has stood out and it has been used in several researches. The authors' model is divided into two processes, which are: the tactic processes and the strategic processes. The first one uses four basic steps: Obtain, Use, Learn and Contribute (Bukowitz & Williams, 2002).

The Obtain section, which is the first step in the KM tactic process, refers to acquiring/capturing/obtaining information and knowledge. To Wang, Wang, Cao & Ye (2016) and Granados, Mohamed and Hlupic (2017), the activities for obtaining knowledge involve its acquisition through knowledge sharing and importation from external sources. To Von Krogh (2012); Lee, Leong, Hew and Ooi (2013); Donate and Pablo (2015), the Obtain section aims to recycle the existing tactic knowledge, generate new capabilities and changes, and has practical implications over the management models and product prototypes in order to keep the institutions' differentiation. This process is facilitated by information technologies and by specialists who are able to see new opportunities in the market.

The second step, Use, takes place after knowledge has been obtained, and it refers to the need of its use. This section deals with the moment when the organization must encourage its creativity, experimentation and receptivity in order to satisfy its beneficiary's needs (Brito *et al.*, 2012; Brito *et al.*, 2019) and, for such, it is important that the organization have a varied source of knowledge, besides the capability to respond to imperatives such as "permeability" and "liberty" and their respective challenges (Bukowitz & Williams, 2002).

Concerning the Learn section, it entails the presence of social relationships and a mutual engagement between people, infrastructure (information and communication technologies – ICTs – and network structure), and collaboration practices, atmosphere and learning organizational culture, motivation strategies to learn and to spread intellectual capital, transformational or participative leaders, innovative performance strategies (dynamic and absorptive capabilities), decentralized knowledge processes (knowledge acquisition, creation, storing and sharing) and intra- and inter-organizational partnerships.

The learning process can be facilitated through social media and networks either formally or informally, and it can take place when researches are revisited, when there are reports on a certain project, in work teams, through experimentation, research and development, applied research (learn-by-doing), departmental collaborations, practice communities, with the help of internal and external experts, through observation, and through useful previous lessons, among other ways (Du Plessis, 2007; Serenko, 2013; Alegre *et al.*, 2013; Lee *et al.*, 2013; Donate & Pablo, 2015).

According to the authors, the learning process aims at facilitating knowledge dissemination, the capabilities' development, innovation sustainability and performance, aligning strategies, adapting behaviors,

solving organizational problems, developing employees' creativity, building up an organizational memory, prospecting future development, generating value, evaluating decisions' efficiency and effectiveness, and stimulating experiences' learning.

Concerning the Contribute section, it is a step of the process that the organizations find difficult to schedule because knowledge sharing might be surrounded by complications and barriers. This process takes place when there is favorable culture, liability, networks involving employees, and reward for shared knowledge (Bukowitz & Williams, 2002). Knowledge sharing can take place either through interpersonal interaction or through databases, it is encouraged by leaderships and its aim is to improve the capabilities of knowledge processes and promote learning (Du Plessis, 2007; Von Krogh, 2012; Lee *et al.*, 2013; Wang, Noe & Wang, 2014).

On the other hand, the second process of the Knowledge Management Diagnosis (KMD) is composed of strategic processes, which encompass the Assess, Build/Keep and Discard sections. According to Bukowitz and Williams (2002), on a strategic level, the goal is to align the organization's knowledge strategy with the institution's general strategy.

Assess is the first section of the strategic process and it is both a strategy reflex and a tool to implement it. The Assess role is to keep the organization in accordance with the reality of the strategy in the edges (Bukowitz & Williams, 2002). Measuring the organizational knowledge is important for the preparation and adequacy of organizational goals, for the organizational strategies need to take on the form of a learning process overtime (Castro *et al.*, 2018).

The Build/Keep section, it is responsible to make sure the acquired knowledge keeps the organization either competitive or manageable in the future. The idea is to develop the knowledge that is still not part of the organization's assets but which will be very important in the future, and to protect and cultivate this knowledge (Bukowitz & Williams, 2002) in order to perfect it.

The seventh and last KM step, presented by Bukowitz and Williams (2002), is Discard. In this step, the organization gives up the knowledge that no longer meets its strategic objectives in order to be able to direct its time and resources to keep and increase the knowledge that is still important for its economic-financial and social performance (Castro *et al.*, 2018). However, it is important to highlight that, according to Bukowitz and Williams (2002), just like many people tend to accumulate, the organizations also find it difficult to abandon their activities and resources that used to produce valuable results. To Castro and Brito (2014), on the other hand, the knowledge discard phase is important to generate innovation. Next, there is the research's delimitation and the methodological procedures.

3 METHODOLOGICAL PROCEDURES

As for the type of research, quantitative research was used through a survey with descriptive purpose (Hair Jr., Black, Babin & Anderson, 2014). To collect the research data, a Knowledge Management Diagnosis questionnaire proposed by Bukowitz and Williams (2002) was used. The tool, developed by Bukowitz and Williams (2002), and which was methodologically validated and tested, is composed of 140 questions divided into seven sections, which are: Obtain, Use, Learn, Contribute, Assess, Build/Keep and Discard, with 20 statements for each one. For each instrument statement, the authors adopt a scale of gradual responses with scores of 1, 2 and 3 points, which correspond to poorly descriptive, moderately descriptive and strongly descriptive, respectively. Therefore, the highest score possible for each section is 60 points and the highest score possible per process is 420 points. Bukowitz and Williams (2002) point out that the values commonly found in each section range from 30% to 70%, and that the lowest mean accepted for the whole knowledge management process is 55%.

In order to go deeper into the research, KM indexes suggested by Brito *et al.* (2012) were used, according to Table 1, in which, for each cognitive domain (questionnaire questions), specific assessing items were defined, that is, indexes were elaborated from literature.

Table 1. Distribution of the assessing research items according to the Knowledge Management indexes

KM Indexes	KMD Sections						
	Obtain	**Use**	**Learn**	**Contribute**	**Assess**	**Build/ Keep**	**Discard**
Knowledge management processes/ Contextualization/ Knowledge management policy	-	-	1, 10, 12, 15	2, 12, 15, 16, 18	3, 4, 9, 10, 13, 14, 15, 17, 18, 20	1, 7, 16, 18	1, 2, 6, 7, 10, 13, 16, 17, 20
Knowledge sharing/ Communication/ Relationship	1, 2, 4, 8, 9	1, 5, 8, 15, 18, 19	19	5, 7, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20	2, 12	1, 2, 19	2, 4, 9, 19
Capability of task accomplishment	15	-	-	-	-	-	-
Knowledge management roles	3, 6, 10, 12, 13, 18	-	-	1, 9, 16	14	3, 10	6
Physical and organizational structure		2, 3, 11, 13, 17	-	4, 8, 10	-	-	-
Electronic means and information technology	5, 7, 11, 14, 16, 17	-	-	4, 10	-	2, 5, 7, 11, 13, 17	-
Documentation, results, measurement/protocols and rules	19, 20	14	-	-	3, 4, 5, 6, 7, 8, 11, 12, 17, 20	15, 20	-
Decisive process	-	4	2, 6, 8, 17, 18, 20	-	13	-	1, 3, 8, 13, 14, 15
Simulation/ games/innovation/problem solution	-	6, 8, 9, 12, 20	4, 11, 13, 16, 20	-	-	4, 10, 14	18
Partnership	-	7, 10, 16	3, 9	6	-	8, 12, 18	11, 12, 19
Knowledge assessment	-	-	5, 7, 9, 14	-	-	-	5, 13, 16
Values	-	-	-	-	-	6, 9	-
Knowledge management appreciation and valorization	-	-	-	3, 17, 18	1, 16, 19	-	10, 20

Source: Adapted from Brito *et al.* (2012).

To evaluate these indices, the data collected from each question in the research instrument were treated using electronic spreadsheets from Microsoft Excel® software, version 16.0.6769.2017 for Windows®, when they were sequenced and their average was extracted. According to Costa (2011), the analysis recommendation for the case of a three-point scale is that a mean of up to 1.8 is poorly descriptive, from 1.8 to 2.4 is moderately descriptive, whereas a mean above 2.4 is strongly descriptive.

The public teaching institutions researched were two universities. One in Northeastern Brazil and the other one in central Portugal. These institutions were chosen due to being public, located in medium-sized

cities (from 50,000 to 300,000 inhabitants), and accessibility, since the research was performed by researchers from the two organizations who are somehow related to their social roles.

The Brazilian institution was founded in 1967 with knowledge production and dissemination in higher education as its social role, sustainable development and full citizenship exercise as its objective by means of humanistic, critical and reflexive training that is able to prepare professionals who can meet society needs. It is composed of four campuses, has 40 graduation courses and 17 stricto sensu post-graduation courses. Moreover, it has 687 teachers and 10,440 students.

Concerning the Portuguese university, it is a public institution that was founded in 1973 whose social role is to create knowledge, expand access to knowledge on behalf of the community and society through investigation, teaching and cooperation; take over a project of individual global training; be an actor in the construction of a European location for investigation and education and of a regional development model defined by innovation and scientific and technological knowledge. The Portuguese institution currently has 16 departments and four Polytechnic schools. It is composed of around 1,004 teachers and 15,000 students.

In the Brazilian institution, 40 education managers joined the research's individuals. On the other hand, the Portuguese institution had 23 participating members. Both institutions had a census with managers on the tactic and strategic levels. Next, the KMD results and data discussion.

4 RESULTS

Table 2 shows the results obtained upon KMD data collection and processing. Based on the score obtained for each section, it was possible to see that there is an adequacy between the results found for the values raised by Bukowitz and Williams (2002) in field studies, which is marked by a satisfactory KM performance in the teaching institutions researched. This initial result, by section, was ratified by the general mean of all the sections, which are: 58.94% for the Brazilian institution, and 64.34% for the Portuguese institution. Therefore, they had a percentage above the 55% advocated by the KMD authors. These results show that the higher education institutions researched are enhancing their innovation capability (Inkinen *et al.*, 2015; Donate & Pablo 2015) and their social effectiveness (Batista, 2012; Álvarez, 2015).

Table 2. General results of the scores and percentages obtained by section

Process	Section	BRAZILIAN HEI			PORTUGUESE HEI		
		Points	% by Section	Performance	Points	% by Section	Performance
Tactic	Obtain	37.40	62.33	Best performance	41.87	69.78	Best performance
	Use	35.00	58.33	Worst performance	39.09	65.14	
	Learn	35.05	58.42		36.52	60.87	Worst performance
	Contribute	35.78	59.63		37.96	63.26	
	Subtotal	**143.23**	**59.68**		**155.43**	**64.76**	
Strategic	Assess	31.45	52.42	Worst performance	34.39	57.32	Worst performance
	Build/Keep	37.03	61.71	Best performance	42.00	70.00	Best performance
	Discard	36.30	60.50		38.52	64.20	
	Subtotal	**104.85**	**58.21**		**114.91**	**63.84**	
Grand Total		**248.00**	**59.05**		**270.35**	**64.37**	

Source: Research data (2019).

The best performances in both universities refer to the KM tactic processes, especially concerning the 'Obtain' section. Therefore, it means that, through people, the institutions perfectly describe its need for information and know how to require, understand, communicate, capture and store the information they

need. As for the worst performances, and following the tendency of other previous researches (Brito *et al.*, 2012; Brito *et al.*, 2017; Brito *et al.*, 2019), they come from the Assess section of the KM strategic process. This section points out to the need of an organizational strategy to take on the shape of learning process overtime through continuous knowledge assessment (Castro *et al.*, 2018).

4.1 Knowledge Management facilitating indexes

From the KM indexes analysis, as suggested by Brito *et al.* (2012), and from the Brazilian and Portuguese education managers' perception, it was possible to identify which of them favor the social effectiveness and the innovation in the HEI researched.

According to Table 3, all the sections presented similar indexes, that is, they can be seen both in the Brazilian and in the Portuguese HEI, which are, respectively: the Obtain section – the Capability to perform a task and Knowledge Sharing / Communication / Relationship indexes; the Use section – the Documentation, results, measurement / protocols and rules index; the Learn section – the Knowledge sharing / Communication / Relationship index; the Contribute section – the Partnership indexes; Knowledge management roles; Physical and organizational structure and Electronic means and information technologies; the Assess section – the Knowledge management appreciation and valorization index; the Build/Keep section – the Electronic means and information technologies index; and the Discard section – the Knowledge sharing / Communication / Relationship and Knowledge management roles indexes.

These results mean that, in both organizations, there are mutual factors of perception that strongly describe the tactical point of view, that the employees are able to spot the information they need at the moment they search, whether in internal or external sources, thus supporting Wang *et al.* (2016) and Granados *et al.* (2017); that they give full explanations when they ask for information, understand and communicate the intended use of such information (Obtain); that the institutions keep levels of information safety protocols private (Use); that the people are able to interact with others in the search for information by favoring the culture of companionship, liability, cooperation and complementarity, no matter the hierarchical level they have (Learn); and, organizational management is enabled through the creation of internal and external partnerships that favor productive relationships and an effective communication in order to facilitate knowledge sharing.

Moreover, the education managers are able to monitor the contents of virtual networks by helping people to better express what they know and lead whoever can benefit from knowledge; the organizational structure of people, groups or information technology is able to connect the knowledge stored so that it can lead the people's contributions; and the information and communication technologies (ICTs) are able to contribute to information storing and direction (Contribute) (Du Plessis, 2007; Von Krogh, 2012; Lee *et al.*, 2013; Wang *et al.*, 2014).

From the strategic point of view, the results mean that there is KM appreciation and valorization (Assess). According to Castro *et al.* (2018), this appreciation is important for the elaboration and adequacy of organizational goals. Moreover, the results show that the institutions either connect or use their electronic means and ITs in a network as a source of reliable information that is needed for the accomplishment of its social role (Build/Keep); and that the HEIs are able to comprehend the impact of the relationships over productivity before the automatization of tasks and treat the affected people with dignity and respect in order to keep the knowledge basis intact; and take part in research groups about the organization's business area by helping to decide the need to acquire knowledge (Bukowitz & Williams, 2002).

Table 3. Facilitator indexes on innovation and social effectiveness through KM

Process	Section	BRAZILIAN HEI	PORTUGUESE HEI
Tactic	Obtain	Capability of task accomplishment (3.53) and Knowledge sharing / Communication / Relationship (3.11)	Capability of task accomplishment (4.04); Knowledge Sharing / Communication / Relationship (3.08); Knowledge Management Roles (3.11); Electronic Means and Information Technologies (3.57); and Documentation, Results, Measurement / Protocols and rules (3.07)
	Use	Documentation, results, measurement / protocols and rules (2.50)	Knowledge Sharing / Communication / Relationship (3.13); Physical and organizational structure (3.08); Partnership (3.55); Documentation, results, measurement / protocols and rules (2.87) and Decisive process (2.09)
	Learn	Knowledge sharing / Communication / Relationship (3.08)	Knowledge management processes / Contextualization / Knowledge Management Policy (2.05); Knowledge Sharing / Communication / Relationship (3.52); Decisive process (2.80) and Knowledge assessment (2.53)
	Contribute	Partnership (3.38); Knowledge management roles (2.65); Physical and organizational structure (2.75) and Electronic means and information technologies (2.78)	Knowledge management processes / Contextualization / Knowledge Management Policy (2.11); Knowledge sharing / Communication / Relationship (2.57); Knowledge management roles (3.00); Physical and organizational structure (3.30); Electronic means and information technologies (3.26); Partnership (3.39)
Strategic	Assess	Knowledge management appreciation and valorization (2.83) and Knowledge management roles (2.55)	Knowledge management processes / Contextualization / Knowledge Management Policy (2.26) and Knowledge management appreciation and valorization (3.09)
	Build / Keep	Electronic means and information technologies (2.98)	Knowledge management processes / Knowledge management policy (2.58) / Knowledge sharing / Communication / Relationship (2.74); Documentation, results, measurement / protocols and rules (3.72); Knowledge management roles (3.00); Electronic means and information technologies (3,65); Simulation / games / innovation / problem solution (3.52); Partnership (3.39) and Values (3,00)
	Discard	Electronic means and information technologies (2.98); Knowledge sharing / Communication / Relationship (2.55); Knowledge management roles (2.51); and Documentation, results, measurement / protocols and rules (2.70)	Knowledge management processes / Contextualization / Knowledge Management Policy (2.81); Simulation / games / innovation / problem solution (4.04); Knowledge sharing / Communication / Relationship (3.20); Knowledge management processes (3.26); Decisive process (2.63); Partnership (2.78); Knowledge assessment (3.04)

Source: Research data (2019).

Based on Table 3, it is possible to see that other indexes stood out separately. In the Brazilian HEI, the following indexes by section were strongly descriptive in their capability to generate innovation and social effectiveness through KM:

a) In the Assess section, the Knowledge Management Roles indexes. This index explains that the HEI strongly produces individuals or groups that are able to lead a knowledge management effort in the organization (Bukowitz & Williams, 2002); and
b) In the Discard section, the Electronic means and Information technologies and Documentation, results, measurement / protocols and rules indexes. This means that the Brazilian institution strongly uses ICTs and keeps protocols and rules to discard the knowledge that adds no value.

Concerning the Portuguese HEI, in the tactic process, the following stood out by section:

a) In the Obtain section: the Knowledge Management Roles; Electronic Means and Information Technologies; and Documentation, Results, Measurement/Protocols and Rules indexes. These indexes explain that the Portuguese HEI has specific individuals or groups that are able to judge, identify, collect, classify, summarize and spread the organizational knowledge, through articulation between information needs and information databases by narrowing information options to the best of the best, which may consider specialists (Von Krogh, 2012); that it has electronic navigating and capture instruments which lead people into the best information needed in order to improve work quality and efficiency; and it has a structure and processes to document and share the information generated centrally and the information published individually (Bukowitz & Williams, 2002);
b) In the Use section, the Knowledge Sharing / Communication / Relationship index stands out. This index offers the comprehension that the Portuguese HEI is strongly willing to consider the collaboration process when people or organizations have an opinion or idea to give in order to improve work;
c) In the Learn section, the Knowledge management process / Contextualization / Knowledge Management Policy; Decisive process and Knowledge Assessment indexes. They mean that the HEI considers the mistakes, failures, problems and disagreements in the experiences respectively, and that this may show the opportunity to learn as a way to rebuild the KM processes in the organizational environment; that it uses mental and decision-taking models redundantly in order to better understand how the facts happen in a specific way, and learn how to solve different issues; and that the ***Portuguese HEI is reflected on work experi20ences and learned knowledge as an indispensable way to adjust the organizational system, making it more effective and efficient (Alegre *et al*., 2013; Donate & Pablo, 2015);
d) The Contribute section: the Knowledge Management Processes / Contextualization / Knowledge Management Policy; and Knowledge Sharing / Communication / Relationship indexes. These indexes show that the Portuguese HEI strongly integrates and legitimates processes to contribute to the organization's knowledge and that it is able to guide the ideas and experiences that are socialized by people so that they can add value to the institution's social role (Bukowitz & Williams, 2002).

Concerning the Portuguese HEI strategic process, here are the innovation and social effectiveness facilitators, by section:

a) Assess: the Knowledge management processes / Contextualization / Knowledge Management Policy context index, whose explanation shows that HEI strongly measures and describes the knowledge management process flow in order to help better understand what it is trying to manage and its results;
b) In the section Build/Keep, these are the indexes: Knowledge Management Processes / Contextualization / Knowledge Management Policy; Knowledge sharing / Communication / Relationship; Knowledge management roles; Simulation / games / innovation / problem solution; Partnerships and Values. These indexes strongly show that the HEI is able to foster the creating process of different people network, through IT systems, in order to retain them and boost

knowledge through long-lasting relationships into other areas by keeping in the groups the people who are indispensable for its social role. Moreover, the institution also knows when it is inappropriate to share knowledge externally; it projects specific individuals or groups that are able to lead the knowledge management effort in the organization; it encourages people to think about the construction of innovative ideas of products or services from non-functional activities of its employees; it builds strategic relationship networks with other organizations and beneficiaries by sharing technology and ideas in order to take innovative products into the market and into society; and, in the Portuguese HEI, people are seen as sources of value instead of cost, and there is an effort to align to formal and informal values between people and institution;

c) In the Discard section, the following indexes stand out, separately: Knowledge management processes / Contextualization / Knowledge management policy; Knowledge sharing / Communication / Relationship. These indexes show that the organization strongly tries to pursue higher value activities or allocate people into the right skills and experiences before considering removing them from their roles/activities, for it analyzes the impact of losing people who hold knowledge that is important for the institution's social role. Furthermore, the Portuguese HEI is able to comprehend the impact of the relationships over productivity before task automatization, and treats the affected people with dignity and respect in order to keep its knowledge basis intact (Bukowitz & Williams, 2002).

4.2 Knowledge Management Barriers

On the other hand, the study results also pointed out to KM barriers for social innovation and effectiveness of the HEI studied, according to Table 4.

Table 4. Critical results to social effectiveness

Process	Section	BRAZILIAN HEI	PORTUGUESE HEI
Tactic	Contribute	Knowledge management processes / Contextualization / Knowledge Management Policy (1.78) and Knowledge management appreciation and valorization (1.79)	-
Strategic	Assess	Knowledge management processes / Contextualization / Knowledge Management Policy (1.78); Knowledge sharing / Communication / Relationship (1.05); Documentation, results, measurement / protocols and rules (1.44) and Decisive process (1.79)	Documentation, results, measurement / protocols and rules (1.77)
	Build/Keep	Knowledge management processes / Contextualization / Knowledge management policy (1.79) and Simulation / games / innovation / problem solution (1.70)	-
	Discard	Knowledge Management Roles (1.65)	-

Source: Research data (2019).

In the Brazilian HEI, the following KM indexes were poorly descriptive: for the Contribute section – the Knowledge management processes / Contextualization / Knowledge Management Policy and Knowledge Management Appreciation and Valorization indexes; for the Assess section – the Knowledge management processes / Contextualization / Knowledge management policy and Knowledge sharing / Communication / Relationship indexes; and for the Discard section – the Knowledge Management Roles index.

These results mean, respectively, that: i) the institution fairly integrates and legitimates the contributing processes with knowledge for the organization; it fairly appreciates and values the people who contribute to the knowledge they have and which can generate value; ii) the institution poorly measures and describes the KM process flow in order to help better understand what it is trying to manage and its results; and, it poorly discusses and reports on KM in order to produce records on the quality of this management; and

iii) there is little employee's participation in research groups about its business area by helping decide the need to acquire new knowledge for the accomplishment of its social role (Bukowitz & Williams, 2002).

Concerning the Portuguese HEI, the Documentation, results, measurement / protocols and rules index was poorly descriptive for KM in the Assess section: This means that the institution poorly keeps products or services with added value as a result of the knowledge they hold (Bukowitz & Williams, 2002).

5 CONCLUSIONS

As a conclusion, both the Brazilian and the Portuguese HEI have a satisfactory KM performance, especially about acquiring knowledge in order to maximize innovation and favor social effectiveness. However, the section which deals with knowledge assessment and which is related to the KM's strategic process, showed that the organizational strategy hasn't taken on the form of a learning process overtime, which can jeopardize the institutions' innovation capability and social effectiveness in the future.

The main indexes, which are mutual for both HEIs and contribute to promoting innovation and social effectiveness in public education service, and which, in turn, are KM facilitators, are: Capability of task accomplishment and Knowledge Sharing / Communication / Relationship (Obtain); Documentation, results, measurement / protocols and rules (Use); Knowledge sharing / Communication / Relationship (Learn); Partnership; Knowledge Management Roles; Physical and organizational structure; Electronic means and information technologies (Contribute); Knowledge management appreciation and valorization (Assess); Electronic means and information technologies (Build/Keep); and Knowledge sharing / Communication / Relationship and Knowledge management roles (Discard).

As for the Brazilian HEI's, the KM barriers are in the following indexes: Knowledge management processes / Contextualization / Knowledge management policy; Knowledge management appreciation and valorization (Contribute); Documentation, results, measurement / protocols and rules; Decisive process (Assess); Simulation / games / innovation / problem solution (Build / Keep); and Knowledge Management Roles (Discard). In the Portuguese institution, the barrier was identified in the Documentation, results, measurement / protocols and rules index, from the KMD's Assess section.

The identification of these indexes creates an opportunity of reflection by the education managers of the HEIs investigated over their implications in the achievement of the HEI's social role for the market and society. Furthermore, it shows the need of KM practices' development which enables the combination between the intellectual with the strategic demands, since most barriers lie on the strategic process of KM.

Therefore, it may seem right to state that the present research contributes to comprehending how the KM process works in two federal public universities in Brazil and in Portugal, and that, at the same time it produces knowledge which can be used by the institutions in the development of their activities and in the search for the improvement of the quality of educational service delivery.

Also, the managerial contribution of the research is to establish the main elements that hinder and promote knowledge management in educational organizations, through the application of a methodology developed for other contexts, as well as its contrast with the numerical results obtained in other studies with the same methodology.

Suggestions for future work are based on longitudinal studies with triangulation of data, in order to overcome the limitations of a single method and non-generalizable results, and on the investigation of how educational institutions, whose main resource is knowledge, can improve its knowledge assessment process.

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