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RESEARCH ARTICLE

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Perspectives on knowledge management capabilities in universities: A qualitative identification of organisational factors

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Abstract

Prior research has had a limited approach to identifying organisational factors related to knowledge management (KM) practices of higher education institutions (HEIs), the centre for knowledge creation. This qualitative study explored such factors affecting KM capabilities from the perspectives of 30 full-time academics in public universities, and identified the dimensions of the KM capabilities framework. Results revealed that physical conditions, budget, human and technological resource management, division of labour, workload, time management, communication, bureaucracy, structural differentiation, motivation, individualism, and organisational behaviour affect KM infrastructure capabilities; bureaucracy, KM teams, institutional platforms, organisational structure, knowledge maps, vision, individual attitudes, academic collaboration, process management, budget, decision-making processes, sustainable academic KM, transparency, labour force, knowledge security, organisational culture, accessibility, and archiving affect KM process capabilities. These results contribute to identifying the organisational factors influencing KM that are critical to guiding practitioners and administrators of HEIs in developing more effective KM strategies and practices.

KEYWORDS

higher education, knowledge management, knowledge management capabilities, organisational factors, qualitative research

Özet

Bilgi üretiminin merkezi olan yükseköğretim kurumlarında, bilgi yönetimi (BY) uygulamalarını etkileyen örgütsel faktörlerin incelendiği araştırmaların sınırlı bir yaklaşıma sahip olduğu görülmektedir. Bu nitel çalışmada, devlet üniversitelerinde tam zamanlı çalışan 30 akademisyenin bakış açısıyla, kurumların BY yeterliliklerini etkileyen örgütsel faktörlerin ortaya çıkarılması ve bu faktörlerin BY Yeterlilikleri Kuramı çerçevesinde boyutlandırılması amaçlanmıştır. Araştırma sonuçlarına göre; fiziksel koşulların, bütçenin, insan ve teknolojik kaynak yönetiminin, iş bölümünün, iş yükünün, zaman yönetiminin, iletişimin, bürokrasinin, yapısal farklılaşmanın, motivasyonun, bireyselliğin ve örgütsel davranışın, BY altyapı yeterliliklerini etkilediği; bürokrasinin, BY takımlarının, kurumsal platformların, örgüt yapısının, bilgi haritalarının, vizyonun, bireysel tutumların, akademik işbirliğinin, süreç yönetiminin, bütçenin, karar verme süreçlerinin, sürdürülebilir akademik BY'nin, şeffaflığın, işgücünün, bilgi güvenliğinin, örgüt kültürünün, erişilebilirliğin ve arşivlemenin, BY süreç yeterliliklerini etkilediği saptanmıştır. Bu araştırma, daha etkili BY stratejileri ve uygulamaları geliştirmede önemli bir role sahip olan ve BY yeterliliklerini etkileyen örgütsel faktörlerin belirlenmesi açısından, yükseköğretim kurumlarında çalışan uygulayıcılara ve yöneticilere rehberlik ederek katkı sağlamaktadır.

1 | INTRODUCTION

The 21st century has been a period in which knowledge emerged in its most complicated forms. As termed 'knowledge age,' this period reflects the paradigm development based on knowledge economy. According to Kushwaha and Pandey (2016), the knowledge economy is characterised by knowledge 'as the main component of economic growth and success' (p. 3). This description is supported by Jung (2020, p. 134), saying it is 'the major driver of economic growth in the global economy.' During this period, knowledge has become the main factor in providing social and economic prosperity (Drucker, 1993). Knowledge economy has led to the development of knowledge societies. This tendency has brought out such a strategic condition that it has become inevitable for organisations to consider knowledge, especially in relation to management; knowledge, as an asset, is a concept whose value has started to be distinct as regards the success of an organisation (Levy, 2011). In the knowledge age, organisations become successful and increase their effectiveness as much as they can acquire, share, and store knowledge.

Higher education institutions (HEIs) are organisations comprising experts in all kinds of fields, making contributions to 'the endeavour of producing and preserving knowledge' with expertise and experience existing in the intellectual capital, and because of such nature, knowledge management (KM) is required for the modernisation of universities and knowledge storage, to meet the requirements for accountability, effectiveness, and efficiency (Pircher & Pausits, 2011, p. 8). The effectiveness of KM in higher education depends on its ability to practise KM processes, including knowledge acquisition, filtering, encapsulation, and application (Bhursry et al., 2012). Therefore, KM is an indispensable requirement to fulfil for HEIs (Laoufi et al., 2011). Moreover, as 'knowledge organisations,' universities must enhance their KM capabilities in response to 'the internal and external environments in which they operate' (Pircher & Pausits, 2011, p. 8); universities 'intensify their research activity[,] making the production of knowledge a priority' (Ion & Castro Ceacero, 2016, p. 2). This requirement could be fulfilled through research on KM.

Prior research on KM in HEIs focus on different key concepts such as measuring knowledge capital (Habersam et al., 2018; Ramírez-Córcoles & Gordillo, 2014; Secundo et al., 2015), knowledge transfer among stakeholders (Romano et al., 2014; Secundo et al., 2017), KM technologies (Fernández-López et al., 2018; Norese & Salassa, 2014), KM for educational purposes (Leung et al., 2015; Rodríguez-Gómez & Gairín, 2015), knowledge sharing (Al-Kurdi et al., 2020; Ceballos et al., 2017; Lo & Tian, 2020; Zalewska-Kurek, 2016) and KM in organisations (Allameh et al., 2017; Biloslavo & Trnavcevic, 2007; Marin et al., 2016; Rowley, 2000; Thienphut et al., 2015; Tippins, 2003; Veer Ramjeawon & Rowley, 2017). Despite the attempts for the adoption of KM in HEIs, scientific evidence on organisational factors affecting KM capabilities in HEIs is still required to be identified in order to picture the route holistically for the adoption procedures in universities. Therefore, this study aimed to explore organisational factors as the determinants for KM capabilities of HEIs from the perspective of state university faculty. Based on the framework of KM capabilities (Gold et al., 2001) embarking on a holistic organisational approach to KM, the research contributes to bridging a research gap for the studies integrating different dimensions related to KM into a single model by determining factors that are invaluable to increasing the effectiveness of KM in HEIs.

2 | THEORETICAL BACKGROUND

Knowledge and KM are areas of interest for practitioners, organisations, and researchers as they increase efficiency and productivity in organisations (Haslinda & Sarinah, 2009). Because KM practices make knowledge processes effective, there is a strong positive relation between KM and organisational performance (Fernández-López et al., 2018), and increased intellectual capital provides a competitive advantage to HEIs in many ways. KM models integrate an organisational context in relation to knowledge, KM process, implementation, and strategies, and define the approaches to make organisations more effective in KM. The framework of KM capabilities is among the most appropriate and extensive models that include infrastructure and process capabilities holistically. Comprising of the necessary dimensions for each capability, the framework combines organisational KM capabilities extensively unlike some other models in the literature.

2.1 | Framework of knowledge management capabilities

The framework of KM capabilities is a model based on the integration of organisational competences in relation to KM and advocates the increase in organisational effectiveness through the development of these competencies. Gold et al.'s (2001) model consisted of two main competences with sub-dimensions: knowledge infrastructure capability and knowledge process capability. The former includes the dimensions of technology, organisational structure, and organisational culture. The latter involves acquisition, conversion, application, and protection of knowledge.

2.1.1 | KM infrastructure capabilities

Technology is among the most important factors stimulating an organisation's social capital and the creation of new information (Argyns & Schon, 1978; Brelade & Harman, 2003). In relation to KM infrastructure capabilities, technology refers to tools, systems, platforms, and automated solutions that increase and centralise the creation, use, and dissemination of knowledge. Holsapple (2003) agreed that the production of knowledge can only be realised through the power of human intellect and thus argued that KM is not solely technology but significantly changed by technological advances.

Organisational structure is the pattern of organisational workflow and process design and the relation between the main elements of a system (Senge et al., 1994). Organisational structures are generally observed in two types: centralisation and decentralisation (Wahba, 2015). A centralised organisational structure is the hierarchical structure of top management, which prevents inter-unit communication, sharing of ideas, and knowledge practices (Kohli & Jaworski, 1990). An autonomous organisational structure supports and strengthens knowledge sharing (Hurley & Green, 2005).

Organisational culture plays an important role in effectively applying KM processes (Bennet & Bennet, 2003; Cheng, 2015; Madge, 2012). Denison (1990) defined organisational culture as the values, beliefs, and principles that constitute an organisation's management system and determine managerial practices and behaviours. Gold et al. (2001) emphasised vision and value systems that make up organisational culture as important elements that support effective KM.

2.1.2 | KM process capabilities

Knowledge acquisition is a KM process capability comprising the processing of prior knowledge in an organisation, outside knowledge, and the realisation of new knowledge (Dhamdhere, 2015). Milton (2007) defined knowledge acquisition as the formation of knowledge by maintaining expert knowledge from people and/or other knowledge sources and storing it on the computer, so that an organisation can make use of it. Wickramasinghe and Von Lubitz (2007) highlighted the importance of the process of knowledge acquisition, which encompasses knowledge delivery, knowledge sharing, observation, interaction, and self-evaluation. These activities are used to obtain the knowledge essential for problem-solving skills.

Knowledge conversion is the process of using prior knowledge (Gold et al., 2001). Ammann (2009) defined knowledge conversion in general terms as transitions between knowledge type and quality. Nonaka (1994) identified knowledge conversion-related processes as socialisation, externalisation, combination, and internalisation or the SECI model, and examined the features of explicit-tacit knowledge conversion. Regarding knowledge conversion, Gold et al. (2001) pointed out the importance of an organisation's ability to organise, integrate, combine, coordinate, and structure knowledge in the integration of knowledge in its different systems and units.

Knowledge application is the actual representation of the KM process (Gold et al., 2001; Zack, 1999). It is the effective evaluation of prior knowledge in various sources, individuals, groups, and units, along with an organisation's newly produced knowledge in the processes of task, action, and decision-making for realising its goals. Biloslavo and Trnavcevic (2007) argued that without knowledge application in an organisation, the value of other KM processes is minimal. They added that the effective use of knowledge transforms organisational knowledge into a sustainable competitive advantage.

Knowledge protection is a KM process that entails the storage of acquired, accumulated, and formed knowledge and databases that can always be accessed and used (Dhamdhere, 2015). For the effective use of knowledge, knowledge must be described and stored; not only explicit knowledge but also tacit knowledge that is converted into explicit knowledge must be stored (Wickramasinghe & Von Lubitz, 2007). Gold

et al. (2001) also argued that knowledge protection applications must be designed to prevent theft, illegal, and/or inappropriate use, drawing attention to the fact that knowledge protection is a KM process that focuses on security.

3 | METHODOLOGY

3.1 | Research design

This study used a qualitative research design of semi-structured interviews with academics to explore and qualify the organisational factors affecting KM capabilities in HEIs as illustrated in Figure 1.

As presented in Figure 1, the research questions were designed to identify the organisational factors (OFs) for each dimension having an effective role in KM capabilities. The main and sub research questions are indicated below:

- RQ1: Which organisational factors affect KM infrastructure capabilities?
  - RQ1.1: Which OFs affect technological infrastructure for KM capabilities?
  - RQ1.2: Which OFs affect organisational structure for KM infrastructure capabilities?
  - RQ1.3: Which OFs affect organisational culture for KM infrastructure capabilities?
- RQ2: Which organisational factors affect KM process capabilities?

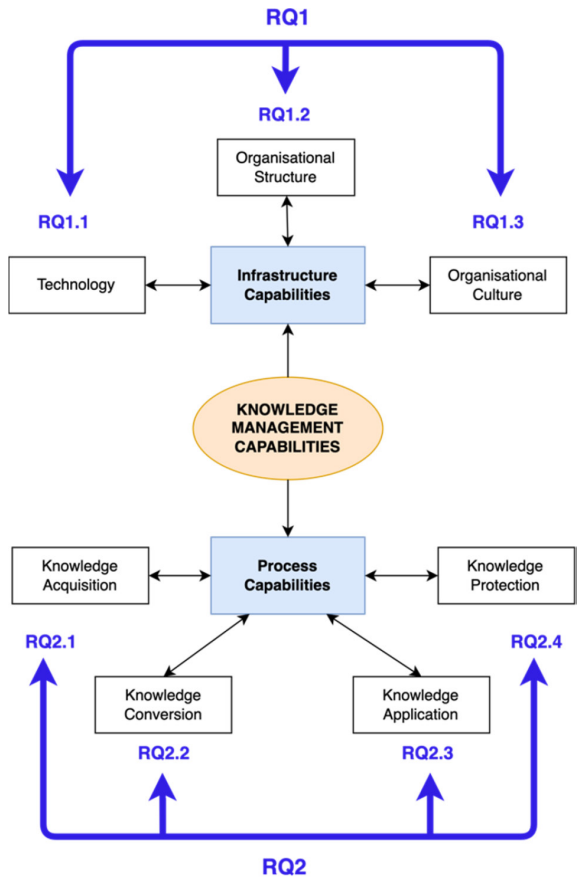

FIGURE 1 The research design

- RQ2.1: Which OFs affect knowledge acquisition for KM process capabilities?
- RQ2.2: Which OFs affect knowledge conversion for KM process capabilities?
- RQ2.3: Which OFs affect knowledge application for KM process capabilities?
- RQ2.4: Which OFs affect knowledge protection for KM process capabilities?

3.2 | Sample and data collection

To address the research questions, the sample of the study was determined as 30 faculty members working full-time at state universities in Turkey. A purposive sampling, a form of non-probability sampling, was performed to identify participants. Based on the inclusion criteria, the participants were selected assuming that their "a-priori theoretical understanding of the topic being studied" (Robinson, 2014, p. 32) was acceptable and their level of experience in HEIs was adequate to deduce organisational factors regarding the study topic.

The number of female participants was 14 (47%) and that of male participants was 16 (53%). The number of participants aged 25–30 years was 4, 31–35 years was 9, 36–40 years was 4, 41–45 years was 3, and 46 or older was 10. Regarding education, the number of participants holding an undergraduate degree was 6 (20%), a master's degree was 12 (40%), and a PhD was 12 (40%). In relation to the academic disciplines of the participants, their fields of expertise were educational sciences, and humanities & social sciences in half shares. As for tenure at the institution, 8 participants (27%) had been working at the university for 1–5 years; 8 (27%), for 6–10 years; 4 (13%), for 11–15 years; 5 (17%), for 16–20 years; and 5 (17%), for 21 or more years. The distribution of the demographic findings of the sample is listed in Appendix 1.

Prior to data collection, ethical clearance of the research was confirmed by the Board of Ethics affiliated with the Institution of Social Sciences. The proper place and time of the interviews were specified prior to the interviews. Each participant was given a consent form. The aims of the study were explained before the interviews. With their permission, all interviews were recorded. Each interview lasted 20–25 minutes on average, totalling to 735 minutes and 15 seconds of audio recordings collected. The audio recordings of the coded sample were objectively transcribed without; participants' names were not mentioned. The details for recordings and transcription are presented in Appendix 2.

3.3 | Measures and data analysis

The authors developed a semi-structured questionnaire to identify the organisational factors affecting KM capabilities in HEIs after an extensive literature review. The questions were constructed based on the framework of KM capabilities (Gold et al., 2001). Under KM infrastructure capabilities, the dimensions were technology, organisational structure, and organisational culture; under KM process capabilities, the dimensions were knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection. There were 9 main and 14 secondary questions in the questionnaire. For content validation, the questionnaire was pretested with a focus group, followed by five participants with qualifications similar to the target study group in the 2018 academic year. The data obtained from group discussions and individual interviews during the pretesting were evaluated to identify possible practical problems regarding demographics, consent forms, and interview questions.

Directed content analysis was performed on the data using NVivo 12 qualitative analysis software. In directed content analysis, the researcher determines the themes in accordance with the theory before analysing the data to be coded using an initial coding scheme (Hsieh & Shannon, 2005). Each participant was given a representative code (P1, P2… P30). Each statement was marked with the gender and age of the participant in parentheses. In accordance with the framework of KM capabilities (Gold et al., 2001) determined prior to the content analysis,

the main themes were KM infrastructure and KM process capabilities; subthemes under the former were technology, organisational structure, and organisational culture; those under the latter were knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection. The codes for organisational factors affecting KM capabilities were identified as a result of the content analysis.

Appropriate validity and reliability procedures were adopted during the data collection and analysis. The critical incident technique (CIT) was adopted to enhance the validity of the data. The number of participants was specified based on the number of critical incidents detected under the codes so that each code would include at least one, as illustrated in Table 1.

As indicated in Table 1, 32 critical incidents were identified to be associated with KM infrastructure capabilities; 12 of which were related with technology and 10 each with organisational structure and organisational structure. Additionally, 46 critical incidents were identified to be associated with KM process capabilities; 16 were related with knowledge conversion, 13 with knowledge protection, 10 with knowledge acquisition, and 7 with knowledge application.

Guba and Lincoln (1982) suggested that trustworthiness should be ensured in qualitative research and categorised into four aspects: credibility, transferability, dependability, and confirmability. Regarding prolonged engagement, the length of the interviews in this study was made as long as possible (Creswell, 2009). For member checking, the data obtained from each participant was confirmed by the participant himself/herself (Guba & Lincoln, 1982). Moreover, peer debriefing was performed through an expert examination of the transcribed data and the results of the content analysis (Creswell, 2009). Mertens (2010) defined transferability as similar judgements formed by different readers in the same qualitative data. Therefore, purposive sampling was used as supported by Sharts-Hopko (2002) in qualitative research, and thick descriptions were provided to avoid impairing the content integrity. Guba and Lincoln (1982) described dependability as obtaining similar results of research conducted in different places and times. In this respect, the triangulation method was performed using other resources in the literature. Finally, the audit trial method was used in this research for confirmability described by Koch (2006) as the organisation of decision-making processes related to theoretical, methodological, and analytical approaches.

4 | RESULTS

To address RQ1 and RQ2, as shown in Table 2, findings were organised as themes (Gold et al., 2001) and codes representing organisational factors, with the number of participants (*n*) for each theme and code.

Regarding KM infrastructure capabilities, under the subtheme of 'technology,' four codes were identified: physical conditions (3 participants), budget (4), human resource management (15), and technological resource

TABLE 1 Distribution of identified critical incidents in interviews

Identified critical incidents			
Associated with knowledge management infrastructure capabilities	***n***	**Associated with knowledge management process capabilities**	***n***
Technology	12	Knowledge acquisition	10
Organisational structure	10	Knowledge conversion	16
Organisational culture	10	Knowledge application	7
		Knowledge protection	13
Total	32	Total	46

Note: *n*, number of participants.

TABLE 2 Distribution of themes and codes

Themes: KM capabilities	Subthemes: Dimensions	Codes: Organisational factors	*n/N*
Infrastructure capabilities	Technology	1. Physical conditions	3/30
		2. Budget	4/30
		3. Human resource management	15/30
		4. Technological resource management	24/30
	Organisational structure	1. Division of labour	3/30
		2. Workload	3/30
		3. Time management	3/30
		4. Communication	6/30
		5. Bureaucracy	7/30
		6. Structural differentiation	29/30
	Organisational culture	1. Bureaucracy	3/30
		2. Motivation	5/30
		3. Individualism	7/30
		4. Communication	8/30
		5. Organisational behaviour	25/30
Process capabilities	Knowledge acquisition	1. Bureaucracy	5/30
		2. Knowledge management teams	5/30
		3. Institutional platforms	16/30
		4. Organisational structure	18/30
		5. Knowledge maps	20/30
	Knowledge conversion	1. Vision	4/30
		2. Bureaucracy	4/30
		3. Individual attitudes	5/30
		4. Academic collaboration	14/30
		5. Process management	30/30
	Knowledge application	1. Vision	3/30
		2. Budget	3/30
		3. Process management	4/30
		4. Bureaucracy	7/30
		5. Decision-making processes	7/30
		6. Sustainable academic knowledge management	10/30
	Knowledge protection	1. Transparency	3/30
		2. Labour force	3/30
		3. Knowledge security	5/30
		4. Organisational culture	7/30
		5. Accessibility	17/30
		6. Archiving	19/30

Note: *n/N*, number of participants/total number of participants.

management (24). Under 'organisational structure,' six codes were extracted: division of labour (3), workload (3), time management (3), communication (6), bureaucracy (7), and structural differentiation (29). Under 'organisational culture,' five codes were revealed: bureaucracy (3), motivation (5), individualism (7), communication (8), and organisational behaviour (25).

Regarding KM process capabilities, under the subtheme of 'knowledge acquisition,' five codes were identified: bureaucracy (5 participants), KM teams (5), institutional platforms (16), organisational structure (18), and knowledge maps (20). Under 'knowledge conversion,' five codes were specified: vision (4), bureaucracy (4), individual attitudes (5), academic collaboration (14), and process management (30). Under 'knowledge application,' six codes were identified: vision (3), budget (3), process management (4), bureaucracy (7), decision-making processes (7), and sustainable academic KM (10). Under 'knowledge protection,' six codes were identified: transparency (3), labour force (3), knowledge security (5), organisational culture (7), accessibility (17), and archiving (19).

4.1 | Results for KM infrastructure capabilities

Technology, organisational structure, and organisational culture are the dimensions of KM infrastructure capabilities that require the development of these three aspects in an organisation to create an effective KM system.

Based on the interviews, technology in KM could be improved with the improvement of physical conditions, allocation of adequate financial resources, and effective management of human and technological resources. The organisational structure in KM can be reconstructed through a clearly balanced division of labour and workload, effective time management, open communication channels, bureaucratic structure to support knowledge flow, and structural differentiation, including practices of both formal and informal knowledge flow. Organisational culture in KM could be created so that effective KM can be accomplished through bureaucracy to increase accessibility of organisational knowledge, higher motivation for knowledge sharing, less individualised attitudes, effective communication systems, and well-established organisational behaviour.

4.2 | Results for KM process capabilities

Knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection are the dimensions of KM process capabilities that necessitate the effective cycles of four main knowledge processes in an organisation: knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection.

Based on the interviews, knowledge acquisition in KM could be improved through a less bureaucratic structure, forming KM teams, effective institutional platforms, an organisational structure to support knowledge acquisition, and practical knowledge maps. Knowledge conversion in KM could be effectively accomplished with the help of vision, non-individualistic attitudes, academic collaboration, and efficient process management. Knowledge application in KM is affected by vision, budget, process management, the level of bureaucratic practices, decision-making processes, and sustainable academic KM in the organisation. Knowledge protection in KM could be improved by providing transparency, adequate labour force, knowledge security, a knowledge-based organisational culture, accessibility to necessary knowledge, and practical archiving operations.

5 | DISCUSSION AND IMPLICATIONS

Considering knowledge as the most prominent factor in the knowledge economy, organisations that can manage knowledge effectively are qualified as 'knowledge organisations' (Bennet & Bennet, 2003; Nonaka &

Takeuchi, 1995). Higher education institutions, as 'autopoietic' organisations (Von Krogh et al., 1994), discharge the responsibilities for research, education and training, technological development, generation of scientific knowledge, and producing solutions to social problems; these responsibilities are directly related to KM (De Moura Castro & Levy, 2015; OECD, 2011). This study contributes to HEIs on how to improve KM capabilities.

Based on the framework of KM capabilities (Gold et al., 2001), this study explored the organisational factors of technology, organisational structure, and organisational culture under KM infrastructure capabilities and of knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection under KM process capabilities, as shown in Figure 2.

5.1 | Implication 1: Organisational factors in technology

Technology is a significant factor that determines human capital and ensures that new knowledge can be created within the organisation (Argyns & Schon, 1978; Brelade & Harman, 2003; Chua & Lam, 2005). Researchers have pointed out that technology is a substantial factor in effective KM (Petrides & Nodine, 2003). In this study, a participant stated technology as an organisational factor:

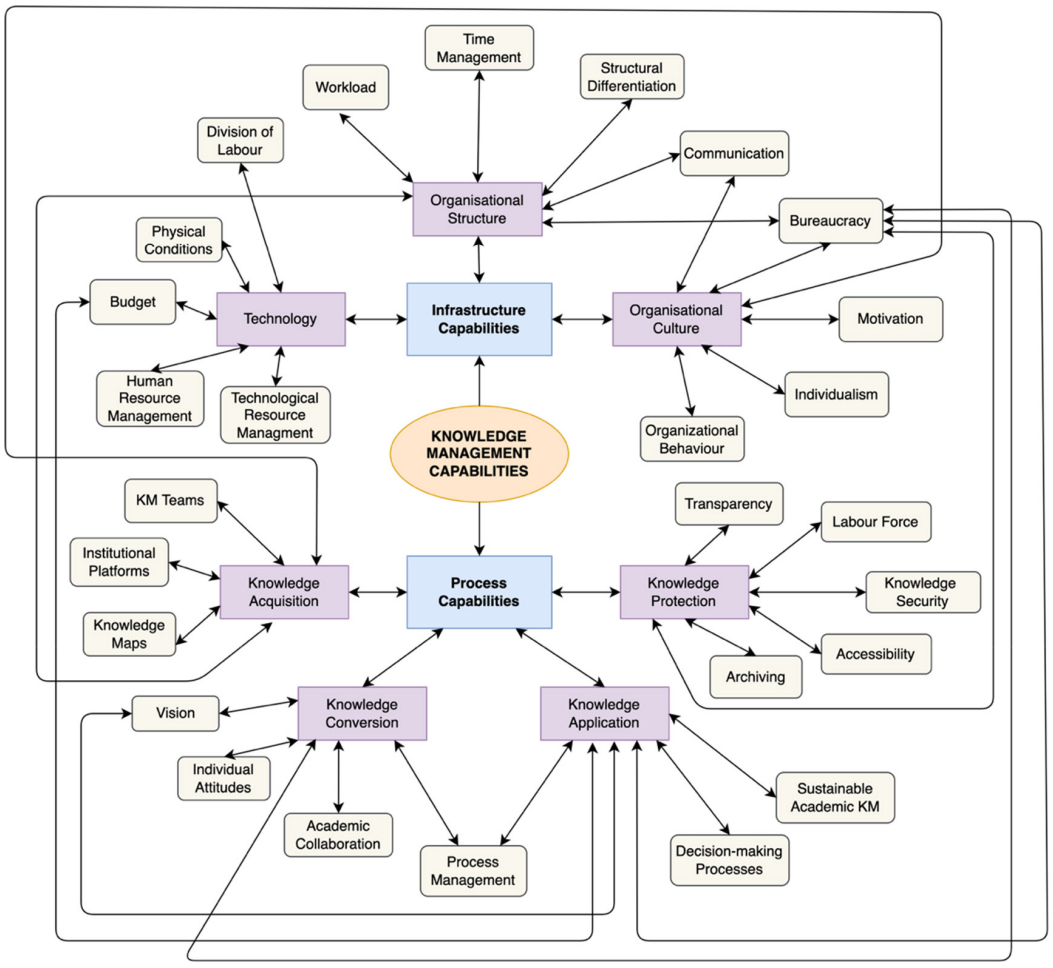

FIGURE 2 Organisational factors affecting KM capabilities

> In fact, our infrastructure is good. However, there are some deficiencies in the equipment that instructors should perform technologically. These stem from our being a state university… I think the organisational factors that cause technological failures are mostly financial.
>
> (P2, Female, 47)

Brelade and Harman (2003) asserted that organisations' technological infrastructure is directly connected to their physical conditions in which the coordination of tasks could be realised more effectively. Holsapple and Joshi (2000) found that successful KM practices are dependent on financial resources. Additionally, Wong (2005) claimed that investing in technological systems is an inevitable requirement for organisations, and financial resources are essential for these kinds of investments.

5.2 | Implication 2: Organisational factors in organisational structure

Organisational structure is among the most prominent factors affecting the effectiveness of KM in an organisation (Daidj, 2012; Rowley, 2000). It determines an organisation's administrative processes and directly influences its KM processes (Omona et al., 2010). In this study, a participant expressed her ideas on organisational structure:

> There may be problems due to the cumbersome structure of the university as a state university. When I say a cumbersome structure, I am referring to the time it takes to correct some of the issues. You are transmitting the problem to one place, that unit is transmitting to another place; solving the problem is spread through a process… In other words, it is a waste of time to solve a disruption in the process.
>
> (P7, Female, 41)

Essentially, organisational structure comprises internal processes that determine the roles and relationships of employees with respect to achieving organisational goals (Bennet & Bennet, 2003); thus, division of labour is emphasised as an important organisational factor affecting KM infrastructure capabilities. Moreover, time management determines the success or failure of KM within an organisation (Daidj, 2012). Veer Ramjeawon and Rowley (2017) explored the supporting and hindering factors for KM in HEIs and found that those related to time hinder KM in organisations. Meanwhile, Brelade and Harman (2003) argued that communication in the context of KM can be shaped productively, as knowledge could be created and cause negativities within an organisation. Rowley (2000) also highlighted the need to qualify the infrastructure of KM in HEIs to support communication between academic communities and researchers.

5.3 | Implication 3: Organisational factors in organisational culture

Organisational culture is a system of values that shapes the management system, managerial practices, and organisation (Denison, 1990; Oh & Han, 2020). As among the KM infrastructure competencies, it affects an organisation's KM (Chua & Lam, 2005; Davenport & Prusak, 1998; Dyer & McDonough, 2001), knowledge sharing (Al-Kurdi et al., 2020; Fullwood et al., 2019) and KM practices. In this study, a participant clearly pointed out the significance of knowledge culture in criticising bureaucratic difficulties:

> First of all, to develop an effective knowledge flow culture, this must be encouraged. To be promoted, it must be easy to do. It is necessary to create a system in which I can transfer my knowledge easily and it should be accessible to everyone. The bureaucratic obstacles to this must be lifted.
>
> (P1, Female, 33)

Bureaucracy, which affects organisational structure and culture, refers to the monitoring of the processes, jobs, and division of labour in an organisation at the level of written rules. However, in knowledge organisations, the priority is the behaviour of the value of knowledge. Therefore, the emergence of bureaucracy as an organisational culture could negatively affect KM. Moreover, the sharing of tacit knowledge—"an action-oriented know-how, which is formed and modified in one's mind through experience" (Matošková, 2020, p. 878)—in individuals (Nonaka & Takeuchi, 1995) and motivation of employees in an organisation are similarly regarded as considerable factors in the socialisation, externalisation, combination, and internalisation processes specified in Nonaka and Takeuchi's (1995) SECI model. In HEIs, individualist attitudes of academic staff could influence KM. As Gold et al. (2001) pointed out, the sharing of individual experiences in the process of knowledge creation can lead to collaboration between individuals, groups, and organisations; this collaboration positively affects KM. However, individual attitudes may have negative organisational reflections on KM processes. Regarding information sharing, as another factor in KM, Chua and Lam (2005) mentioned the reluctance to share information among cultural factors affecting the success of KM. Veer Ramjeawon and Rowley (2017) explored the factors supporting and preventing KM in HEIs and concluded that the lack of a knowledge-sharing culture could be a reason hindering KM.

5.4 | Implication 4: Organisational factors in knowledge acquisition

Knowledge acquisition includes discovering existing knowledge in an organisation, creating new knowledge from the sources inside and outside an organisation, and knowledge collaborations through knowledge transfer, knowledge sharing, observation, interaction, and self-evaluation activities (Dhamdhere, 2015; Milton, 2007). In this study, a participant indicated her difficulties in acquiring knowledge at her university:

> If the knowledge I want to acquire is at an administrative level, certain procedures and correspondences are necessary. In other words, I am faced with bureaucratic barriers.
>
> (P12, Female, 30)

Bureaucracy, as a factor affecting organisational structure and culture, could also influence knowledge acquisition of KM process capabilities (De Long & Fahey, 2000; Tippins, 2003). As bureaucracy requires a hierarchical order of work and practices in an organisation, it may also negatively affect the acquisition process of knowledge.

Institutional platforms, where virtual communication and relations are carried out and the effect of new technology is directly observed in an organisation, integrate internal and external communication for many organisations (Brelade & Harman, 2003). Institutional platforms include tools, such as databases (Kim & Park, 2003), data mining techniques (Cheng, 2015), content management tools (Botha et al., 2008), knowledge repository (Rowley, 2000), communication technologies (Dalkir, 2011), e-mails (Botha et al., 2008; Dalkir, 2011), and knowledge portals (Botha et al., 2008). Therefore, an organisation's KM practices, especially the process of knowledge acquisition, could become more effective. Moreover, knowledge maps are directly related to the process of acquiring knowledge, as they involve the stages of defining where knowledge exists (Brelade & Harman, 2003). Andersson et al. (2010) pointed out that knowledge maps are useful for learning, creating, and sharing knowledge. They added that there is a function of converting various types of knowledge in the organisation into explicit knowledge.

5.5 | Implication 5: Organisational factors in knowledge conversion

Knowledge conversion refers to the organisation of knowledge in relation to type and quality and the integration of its different sources in a way that the organisation makes use of its knowledge (Ammann, 2009; Nonaka, 1994).

Brelade and Harman (2003) described the process of knowledge conversion as the integration of existing knowledge stored in an organisation with the knowledge of individuals. In this study, a participant declared the existence of insufficient academic collaboration in faculties:

> As far as I can see, there isn't much cooperation effort across disciplines, or if we consider it more broadly, across faculties.
>
> (P14, Male 32)

Academic collaboration, in relation to project development and interdisciplinary studies, refers to the cooperative attitudes of academic staff, especially in the context of academic knowledge. The research function of HEIs brings together academic collaborations, interdisciplinary studies, and project development processes with the aim of producing knowledge (OECD, 2011). Similarly, Brelade and Harman (2003) stated that KM requires interdisciplinary work, collaboration, sharing of ideas, and experience. As Brouwer and Jansen (2019) underlined, interaction and collaboration through knowledge sharing are valuable in every discipline. Particularly, national and international article publications are concrete indicators of transformed information and knowledge production for academic collaboration (Chan et al., 2020). In relation to inter-unit integration, auditing, updating, and integrating knowledge, Davenport and Prusak (1998) emphasised the importance of process management in the success of KM, which requires a network of continuous and purposeful interactions between individuals, knowledge elements, and activities (Firestone, 2001). Therefore, managing continuous interaction requires effective process management and inter-unit integration.

5.6 | Implication 6: Organisational factors in knowledge application

Knowledge applications represent the KM process, provide sustainable competitive advantage, require efficient evaluation of knowledge, manage decision-making mechanisms, and increase organisational effectiveness (Biloslavo & Trnavcevic, 2007; Farkas & Kiraly, 2009; Zack, 1999). In this study, a participant mentioned the lack of organisational vision in the knowledge application:

> It is difficult to generalise, but there have been changes based on knowledge. However, we cannot say that this is a policy. There is no such spirit. There is no institutional vision as 'Let's analyse, talk about, discuss and then decide about issues' in the light of the acquired knowledge.
>
> (P8, Male, 50)

Similarly, Holsapple (2008) stressed that knowledge is a factor used in decision-making processes; various knowledge roles support decision-making processes. Organisational vision plays a significant role in decision-making and can influence knowledge application by affecting the success of KM (Davenport & Prusak, 1998). In particular, the process of achieving organisational objectives requires HEIs to effectively use the knowledge they produce (Sá et al., 2018) as knowledge organisations. Therefore, the effective use of knowledge cannot be achieved without disregarding process management. Bureaucracy also affects knowledge applications. In hierarchical organisational structures, the processes of the effective use of knowledge cannot be operated dynamically. In particular, the intensive bureaucratic organisation of state universities could have a negative impact on the use of knowledge produced by faculties.

Academic knowledge created for fields by sharing academic interests and disciplines in faculties is the basic purpose of universities (Galbreath, 2000). Bukowitz and Williams (1999) emphasised the importance of knowledge development process and its sustainability regarding the strategic processes of KM. They clarified that developing knowledge and making it sustainable support future knowledge gains in an organisation.

5.7 | Implication 7: Organisational factors in knowledge protection

Knowledge protection is the process of protecting and storing all the tacit and explicit knowledge acquired, collected, and created within an organisation accessibly and practically by using adequate mechanisms with a security-oriented approach (Dhamdhere, 2015; Farkas & Kiraly, 2009). Badawy and Magdy (2015) emphasised that knowledge is a valuable asset for organisations and should be handled accordingly. They also highlighted the need to maintain the integrated systems of HEIs measuring academic performance and achievement in a way that provides valid and reliable data, which results in an increase in organisational performance (Fernández-López et al., 2018; Matošková, 2020; Oh & Han, 2020) In this study, a participant noted the knowledge security provided in his institution:

> I think that at our university, security is provided especially regarding knowledge on the internet. We can systemise the personal knowledge that we want or do not want to share and then open it to access... I think there is knowledge security in this area.
>
> (P30, Male, 37)

Knowledge security and accessibility, as other organisational factors, are significant in knowledge protection. Gold et al. (2001) emphasised knowledge protection as a security-oriented KM process. They advocated for knowledge protection practices to be designed in ways that prevent theft and illegal and/or inappropriate use of knowledge within an organisation and obtain knowledge from competitive sources that provide competitive advantage for the organisation. They stated that the storage of such knowledge in an accessible manner ensures knowledge security by preventing loss of knowledge within an organisation. The knowledge acquired, collected, and created in an organisation must be organised and stored in a database so that it is always accessible and available (Dhamdhere, 2015). As organisational culture reflects the values, attitudes, and behaviours adopted within an organisation, it could prevent the re-use of this knowledge by exhibiting extremely protectionist attitudes in providing access to stored knowledge. Unlike these attitudes, organisations with a knowledge culture, such as universities, emphasise the principle of accessibility in the protection of knowledge processes. The storage of knowledge in the knowledge repositories created in an organisation (Wiig, 1993) refers to the way knowledge is stored during the process of knowledge protection. KM tools often have the qualifications of archiving (Dalkir, 2011; Wickramasinghe & Von Lubitz, 2007), which facilitates knowledge acquisition and protection.

6 | CONCLUSION

Universities are the sources of knowledge owned by nations but often include rarely existing human capital, which is valuable for the creation of new knowledge in the global economy. KM practices aimed at the effective management of knowledge resources and life cycle could make the intellectual capital of universities more effective by integrating explicit and tacit knowledge, indicating the necessity of KM in higher education. In this framework, KM strategies, applications, and activities that increase the ability of HEIs to perform their functions and organisational performance should be designed in a way that practitioners and administrators consider the uncovered organisational factors affecting KM infrastructure and process capabilities.

The findings of this study, with its implications specifically based on KM capabilities in HEIs, are significant reflections of theoretical approaches to KM in organisations. Therefore, practical suggestions are made so that KM in HEIs can be effectively realised. Despite this study's significant implications, it is limited to the interviews of the interviewed academics, similar to other qualitatively designed research. Because of the lack of statistically representative data, causality is difficult to investigate, and the study results reflect only the opinions and

judgement of the interviewees. Future research should use a mixed-method study and examine to what extent these organisational factors have an impact on HEIs for each implication.

AUTHOR CONTRIBUTIONS

F. Sehkar Fayda-Kinik: Conceptualization; Data curation; Formal analysis; Visualization; Writing - original draft; Methodology; Investigation; Software; Validation; Resources. Munevver Cetin: Conceptualization; Data curation; Formal analysis; Writing - review & editing; Project administration; Supervision; Investigation; Methodology; Validation; Resources.

CONFLICT OF INTEREST

We have no known conflict of interest to disclose.

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APPENDIX 1

The distribution of the sample demographics

Coded participants	Gender	Age	Education	Field of expertise	Tenure in the HEI
Participant 1	F	31–35	MA	Humanities & Social Sciences	6–10 yrs
Participant 2	F	46+	BA	Humanities & Social Sciences	16–20 yrs
Participant 3	F	31–35	MA	Humanities & Social Sciences	6–10 yrs
Participant 4	F	31–35	MA	Humanities & Social Sciences	1–5 yrs
Participant 5	F	31–35	BA	Humanities & Social Sciences	6–10 yrs
Participant 6	F	41–45	MA	Educational Sciences	11–15 yrs
Participant 7	F	41–45	PhD	Educational Sciences	11–15 yrs
Participant 8	M	46+	BA	Educational Sciences	21+ yrs
Participant 9	F	46+	BA	Educational Sciences	16–20 yrs

APPENDIX 1 (Continued)

Coded participants	Gender	Age	Education	Field of expertise	Tenure in the HEI
Participant 10	M	31–35	BA	Educational Sciences	6–10 yrs
Participant 11	M	36–40	PhD	Humanities & Social Sciences	11–15 yrs
Participant 12	F	25–30	MA	Educational Sciences	1–5 yrs
Participant 13	M	46+	DR	Humanities & Social Sciences	21+ yrs
Participant 14	M	31–35	MA	Educational Sciences	1–5 yrs
Participant 15	F	31–35	MA	Educational Sciences	1–5 yrs
Participant 16	M	36–40	MA	Educational Sciences	1–5 yrs
Participant 17	M	46+	PhD	Educational Sciences	6–10 yrs
Participant 18	M	36–40	PhD	Educational Sciences	6–10 yrs
Participant 19	F	25–30	MA	Educational Sciences	1–5 yrs
Participant 20	F	46+	PhD	Educational Sciences	16–20 yrs
Participant 21	M	31–35	BA	Humanities & Social Sciences	6–10 yrs
Participant 22	F	41–45	MA	Humanities & Social Sciences	16–20 yrs
Participant 23	M	46+	PhD	Humanities & Social Sciences	21+ yrs
Participant 24	M	46+	PhD	Humanities & Social Sciences	16–20 yrs
Participant 25	M	31–35	PhD	Humanities & Social Sciences	6–10 yrs
Participant 26	M	25–30	MA	Humanities & Social Sciences	1–5 yrs
Participant 27	M	25–30	MA	Humanities & Social Sciences	1–5 yrs
Participant 28	M	46+	PhD	Educational Sciences	21+ yrs
Participant 29	F	46+	PhD	Educational Sciences	21+ yrs
Participant 30	M	36–40	PhD	Humanities & Social Sciences	11–15 yrs

APPENDIX 2

Recording and transcription details of the interviews

Coded participants	Duration of recordings	Words transcribed	Frequency in codes for dimensions of KM capabilities						
			KM infrastructure capabilities			KM process capabilities			
			T	OS	OC	Kac	KC	Kapp	KP
	min/s	No.	*f*	*f*	*f*	*f*	*f*	*f*	*f*
Participant 1	25′56″	2254	1	2	4	3	2	1	3
Participant 2	10′12″	766	2	1	N/A	1	1	N/A	1
Participant 3	11′27″	768	1	1	2	1	2	N/A	N/A
Participant 4	25′30″	1803	1	3	3	1	2	1	3
Participant 5	28′32″	1439	1	4	4	2	2	1	2
Participant 6	29′35″	1806	2	3	2	2	2	N/A	2
Participant 7	33′15″	2421	N/A	3	1	4	2	N/A	2
Participant 8	17′33″	959	1	2	1	1	2	1	1
Participant 9	34′5″	1794	3	2	1	1	2	N/A	1
Participant 10	34′46″	1956	4	1	3	2	4	1	2
Participant 11	13′12″	1026	1	3	1	3	4	1	1
Participant 12	35′57″	1890	2	2	2	4	3	2	1
Participant 13	17′12″	976	1	1	N/A	2	2	N/A	N/A
Participant 14	20′32″	985	2	2	1	2	3	1	2
Participant 15	27′1″	1500	2	2	1	3	4	2	3
Participant 16	29′11″	1384	1	2	1	2	4	2	N/A
Participant 17	23′25″	1076	1	N/A	1	1	2	NA	1
Participant 18	22′34″	1137	3	1	1	2	2	1	3
Participant 19	16′35″	1138	1	2	3	2	2	2	2
Participant 20	29′23″	1725	2	1	2	3	6	2	3
Participant 21	15′47″	1230	N/A	1	1	4	3	2	3
Participant 22	17′43″	1101	1	1	2	2	3	2	2
Participant 23	10′38″	787	1	1	1	2	3	1	1
Participant 24	17′	1010	1	1	1	2	4	1	1
Participant 25	37′50″	1798	2	N/A	2	3	3	2	2
Participant 26	20′30″	1125	1	2	2	3	3	1	2
Participant 27	18′51″	1139	2	N/A	2	2	3	2	2
Participant 28	73′18″	2884	1	3	1	1	2	3	2
Participant 29	27′3″	1561	3	2	1	1	2	1	3
Participant 30	10′36″	954	2	1	1	2	2	1	3
Total	735′15″	42,392	46	50	48	64	81	34	54

Abbreviations: T, technology; OS, organisational structure; OC, organisational culture; Kac, knowledge acquisition; KC, knowledge conversion; Kapp, knowledge application; KP, knowledge protection; N/A, not applicable.