A study of knowledge management systems processes and technology in open and distance education institutions in higher education

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Abstract

Purpose – The purpose of this paper is to focus on the implementation and evaluation of knowledge management and e-transformation strategies of higher educational institutions in distance education. After an evaluation of higher educational practices in different countries, distance education was considered a different strategy and was emphasized as an advantage in competitiveness.
Design/methodology/approach – The study reflects a case study in the context of qualitative research. A written view report was conducted to evaluate the awareness of digital efficiency and roles of the teachers in learning environments and evaluation processes in the organizational structure. The qualitative data were evaluated through Nvivo qualitative data analysis. When the literature is overviewed, it can be observed that there are limited studies in this field.
Findings – As a result, distance education contributes a lot to providing equal opportunities in education. It is of great importance that individuals are aware of their roles in the process of accessibility, institutional support, technological infrastructure, support provided for students, learning-teaching environments and evaluation of distance education programs based on equality and life-long learning. In applications of different countries evaluated by Salmon *et al.* (2014) based on Carpe Diem Model, it is argued that knowledge management and sharing, the role of teachers and digital capability in distance education applications are crucial.
Research limitations/implications – The study is limited to 35 research participants.
Practical implications – Internationalization has become an important issue in higher educational activities.
Social implications – Diffusion of the uses of knowledge management practice in distance education is important.
Originality/value – The study has a great value on the use of international perspectives and the Carpe Diem Model for the evaluation.

Keywords Distance education, Knowledge management, Higher education, Open data sources

Paper type Research paper

Introduction

Open and distance learning have a great contribution to educational processes in today's intensive efforts in quality improvement and internationalization (Courtney and Wilhoite-Mathews, 2015). The philosophy of widespread life-long and open and distance education has provided equality in education and access to information (Altınay *et al.*, 2016). Open and distance

learning applications forming the basis of strategic competitiveness concept among institutions are necessary for changes in education and following innovations to adapt to today's world. When both institutional and pedagogical productivity in applications in open and distance education are considered, knowledge management and designing principles for every individual should be integrated into the system (Latchem *et al.*, 2006; Edwards, 2015). In creating a sustainable equality in education for improvement in the light of quality indications, institutional support and awareness of individual roles are known as the most important success factors. In this respect, the research study contributes to analyze the availability of higher education institutions on the new pedagogy and knowledge management.

The knowledge management approach in distance education institution for competitive advantage for enhancing the institutional and pedagogical productivity in applications is crucial. In order to practice communication and information technologies in education it is essential that technology is correctly used at the right time and restructured to provide sound educational opportunities. In this respect, knowledge management system is the significant approach to evaluate and restructure the system upon quality principles. As literature pointed out accessibility, social interaction in learning environments are quality indications in open education, the evaluation of knowledge management processes is of crucial approach to be considered to restructure system in line with quality standards (Aksal Altınay, 2015; Altınay *et al.*, 2017). As the literature sheds a light on the importance of accessibility, social interaction in learning environment and quality indications, this research study puts an emphasis on the importance of knowledge management in learning. Parallel to the discussion of traditional and open learning environments in information era, teacher's qualifications and aims are need to be questioned and studies need to be are core subject to changing roles of mode on teaching and learning. Competition has become a need for the importance of service quality and requirements for professional development, training, collegiality and specialization in the structure and functions of higher education institutions. It is essential to carry out quality standards and accreditation studies that will enable internal and external controls even for open and distance learning applications. As open and distance learning feeds the system of higher education, this system needs to verify internal views and evaluations upon quality standards (Ossiannilsson *et al.*, 2016). There is an intensified need to understand structure of applications and current situation for setting future policies. In this respect, this research enlightens the application analysis.

Changing information technology, communication requires a transformation. In this respect, transformational learning which stances on sharing and experiencing become core subject in changing learning context. Experimenting new roles through new frames of learning context and tools and questioning to reach out new adaptation is crucial. In this respect, new learning contexts through new technologies and pedagogy need to be adapted to the system. In this respect, flipped classroom learning, smart learning and online learning foster the essence of transformational learning in order to shed a light to make attempt for the digitalization and new pedagogy (Christine *et al.*, 2015). Ways of learning indicate that transformation and knowledge management within the learning is crucial. For an international quality, in terms of developing both pedagogical and institutional shortages, knowledge management should be a matter of team work, learning should be an ongoing process, students should be supported, there should be evaluation for the betterment and teacher's roles should strongly be emphasized in scientific studies (Maor, 2008; Altınay *et al.*, 2017; Creelman *et al.*, 2014; Kandiko, 2013). Furthermore, in achieving institutional identity, it is important that social interaction in learning environments, learner expectations and cultures is considered for improvement (Salmon *et al.*, 2015; Baykan *et al.*, 2018). Therefore this research study puts an emphasis on the role of developing institutional policies, accreditation studies and collaboration among institutions, strengthening communication websites in the body of institutions and learning environments, considering professional development,

specifying jobs, learner and management support and leadership, technological structure and equipment, trademark and service differentiation, developing projects and scientific studies in budget and business management, transformation into radical changes for the betterment by underlying the importance of knowledge management for a new pedagogy.

The aim

The aim of this research is to evaluate knowledge management approach in open and distance learning in higher education. The following research questions are answered:

RQ1. Are distance education applications promising for the future?

RQ2. What are the advantages and disadvantages of the new technology throughout learning process?

RQ3. How are the steps of knowledge management evaluated in the use of new technologies?

Methodology

Research model

This is a qualitative study designed in a comparative case study, one of qualitative designs. A qualitative study is a process that includes observations, data collection techniques, such as analysis of interviews and documents, putting forth perceptions and events in a realistic and holistic way in natural milieu. Qualitative research studies prioritize forming and understanding theories by investigating social facts in their very environments (Yıldırım and Şimşek, 2011). The fundamental of this method is to move from interdisciplinary holistic views to investigate a problem through an explanatory approach (Cohen *et al.*, 2000; Karasar, 2008).

Qualitative research studies are concerned with individuals' feelings, experiences and thoughts and carry out analyses. One of the most important features of qualitative case studies is to investigate one or more cases in-depth. That is to say, factors in a case (individuals, events, environment, processes, etc.) are investigated in a holistic way and focused on how they affect the related issue or how they are affected. In a case study one or more cases are investigated within their contexts (Yıldırım and Şimşek, 2011). Compared to other qualitative research designs, in a case study design a current contextual phenomenon (e.g. examining a teaching program, a process or an event) is investigated within specified limits (Karasar, 2008).

In case studies multi-dimensional data collection techniques, such as observations and document analysis, are conducted and the patterns of the data obtained are formed, described, analyzed comparatively and the results are reported either as single units or as a whole (Yıldırım and Şimşek, 2011). The data were collected through interview techniques in this research. The aim of comparative case studies is to compare a specified research unit in a cross way. Comparative studies include various units and views in a broad perspective, in which the content of the subject matter is well understood in detail. The designed comparative analyses in this research were formed through interviews (Creswell, 2003). The data were collected through interview technique. With this technique it is aimed to catch and understand spontaneous relativity and mobility of social facts. The advantage of an interview technique is that it presents fist hand data through individual views as well as the reflection on social processes formed by those views (Yıldırım and Şimşek, 2011).

In total, 35 participants and experts in their majors from universities in TRNC, Turkey, Spain, Sweden, India, Egypt and Canada composed a study group.

Data collection tools

In this qualitative research, interview form as a self-report was used as a data collection tool. Three open questions were prepared for the interview form. Prior to the forming of the

interview form, the related literature was overviewed, a draft was designed and experts were consulted for confirmation (Yıldırım and Şimşek, 2011; Legard *et al.*, 2003).

The interview form was rearranged after expert confirmation. The forms were initially tried with two participants and the interviews were read several times before they were put into written form. On obtaining reliable records, the other participants were involved in the process. The interview form was composed of questions prepared in advance. However, the form was subject to alterations during the interview or sub-questions may affect the run of the interview to help the individual give clearer explanations. The interview questions were finalized after conducting pilot studies with three teachers.

Data analysis
The qualitative data obtained were overviewed and subjected to content analysis to specify code and categorize similar themes. The basic aim in a content analysis is to put together similar concepts in the data unit, form themes and sort out the connection among them for interpretation (Yıldırım and Şimşek, 2011).

The data obtained were analyzed through content analysis (Yıldırım and Şimşek, 2011). The participants were each given a number, the interviews were documented and the data obtained were examined, put into meaningful sections, and their conceptual meanings were named and coded regarding to the focus of research questions. In the light of the conceptual frame of research questions and interview questions, the coding list was finalized after all the data were examined. All the data obtained were examined through required stages and the results were reached (Creswell, 2003).

In total, 35 participants from different nations reflected their experiences and potential learning level about knowledge management. The participants are categorized as four to six years experiences about online education, they have master degree education and their ages are between 34 and 60.

Findings and interpretations
Demographic information about research participants
Participants' ages and their education level with their nations are underlined in Table I.

Views about the future of distance education application
Participant views about the subject question are shown in Table II in themes and rates.

Participants	34–40 age	41–46 age	47–53 age	54–60 age
Master degree education level	22	6	4	3
Northern Cyprus	5		4	3
Other countries	23			

Table I.
Research participants

Themes	Respondent	Non-respondent	Total	%
Distance education will develop and become widespread at universities	28	7	35	75
Academicians will have to be trained in technology web to help widespread of distance education applications	30	5	35	84
It has been observed that distance education at universities in today's developed countries has become a great need	25	10	35	60

Table II.
Future of distance education application

In total, 35 participants were asked about the future of distance education activities and their views are as presented in Table II.

A participant (P 24) aged between 34 and 40 expressed positive beliefs in the future of distance education applications saying, "Technology has its place in today's rapidly developing countries. Parallel to technology, due to economical conditions and time, I strongly believe that Distance Education will develop much more rapidly." In total, 75 percent of the participants expressed similar views. On the other hand, participants 17 and 9 aged between 47 and 53, respectively, expressed that distance education activities are not persuaded to be implemented in higher education.

Views about advantages and disadvantages of new technologies in the process of learning and teaching
In total, 35 participants expressed their views on the advantages and disadvantages of new technologies (flipped classrooms, mobile learning, etc.) in learning and teaching processes in higher education as in Table III.

P 24 aged between 34 and 40 expressed views and said, "Parallel to the rising number of flipped classrooms, mobile learning, and developed technology access to information has accelerated and with the facilities provided learning an teaching has become faster and time is saved to a great extent." In total, 71 percent of the participants agreed with this issue and admitted that education technologies were great time-savers. Most of the participants aged between 34 and 40 indicated that new technologies will foster permanent learning and they will be used for the research and positive learning outcomes.

A self-evaluation of knowledge management stages in the use of new technologies
The participants' views about the subject question above are shown in themes and rates in Table IV.

In total, 35 participants expressed their views about the subject question. Table III reveals views in rates, and themes are shown in Table IV.

Themes	Respondent	Non-respondent	Total	%
Use of new technologies in universities time will be saved to a great extent during learning/teaching processes	27	8	35	71
The rise of new technology will make access to information fast and facilitate research resulting in positive learning outcomes	26	9	35	66
New technologies in universities will lessen learning by doing and bring about permanent learning	29	6	35	80

Table III.
Advantages and disadvantages of new technologies

Themes	Respondent	Non-respondent	Total	%
The first stage of knowledge management is using new technologies in education to specify information	27	8	35	71
The second stage is using new technologies to reach information	26	9	35	66
The third stage is the use of technologies to practice information	24	11	35	55
The fourth stage the use of technologies to evaluate information	25	10	35	60

Table IV.
Self-evaluation of knowledge management stages

P 32 aged between 40 and 46 stressed that using new technologies and techniques could help active use of knowledge management and facilitate reaching targets in distance education and teaching. The participant added saying, "Firstly, educational technologies are greatly needed in specifying information, one of the stages of knowledge management. The second stage is to determine how learners reach information. Putting the information obtained into practice and informing the learners on learning by doing is the third stage. Thus, permanent learning and teaching can be achieved. The fourth stage is the evaluation of information. In order to measure the applicability, new technology techniques are needed to determine any shortages and how to overcome them." In total, 66 percent of the participants advocated that educational technologies contributed a great deal to distance education. On the other hand, participants 9 and 15 aged between 54 and 60, respectively, underlined that using new technologies need training otherwise there will not be a permanent learning.

Conclusion
A big majority of the participants expressed positive views about the future of distance education applications and believed that they would develop and be more prevalent at universities. However, as the participants stated, in order to reach this target, academicians needed to be well informed and trained in technology network (it has been stated that among today's developed societies distance education applications at universities are needed more than ever). The participants commonly agreed that new technologies in high schools would first save time to a great extent and add to fast and better improvement of education at universities. In addition, developed technologies at universities would make access to information easier and quicker, facilitate doing research and teaching and learning would be faster. Another finding revealed that new technologies at universities there would be permanent learning and would help more develop "learning by doing" strategies.

Related to the subject question above, as the first stage of knowledge management at universities, new technologies should be used to specify information. Particularly education technologies are strongly needed to specify information. The second stage, how to have access to information, deals with reaching information in teaching and learning (Salmon *et al.*, 2015). The third stage deals with the application of the information obtained and help learners "learn by doing." Evaluation of information is the fourth stage. The participants pointed to the need for new technologies to measure the amount of unfulfilled education so as to specify the reasons, sources and measures to be taken.

Discussion
In the light of these findings, it can be suggested that steps are taken by sound and radical decision to develop and widespread distance education (Baykan *et al.*, 2018). The practice of distance education is needed for the higher education policies in order to get universal values and actions for the quality.

In this context, it can be assumed that the targeted achievements in teaching and learning can be reached through using new technologies together with interacting knowledge management stages with educational technologies in distance education (Altınay *et al.*, 2018).

There is an intensified need to consider the rationale stance of transformational learning in gaining the merits of different learning strategies through the support of new technologies.

As the research study relies on evaluating the evaluate knowledge management and sharing as well as the new roles and efficiencies in open and distance education in higher education, it is limited to the perceptions of 35 participants within a qualitative base. In addition, research focuses on distance education applications promising for the future, the advantages and disadvantages of the new technology for learning and the steps

of knowledge management. For further studies, different researchers' experiences as a practice diary can be used as a reflection in order to enrich data and extend the capacity of tangible examples to the field.

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