RESEARCH TRENDS IN TURKISH DISTANCE EDUCATION: A CONTENT ANALYSIS OF DISSERTATIONS, 1986-2014

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English Abstract

This paper presents a content analytic approach on doctoral dissertations in the field of distance education in Turkish Higher Education context from the years of 1986 through 2014. A total of 61 dissertations were examined to explore keywords, academic discipline, research areas, theoretical/conceptual frameworks, research designs, research models, tests and analyses, data collection tools, participants, variables/research interests, and leading contributor institutions. It is believed that this study can be beneficial to the field of distance education in Turkish context to identify research trends and set a research agenda by exploring dissertations that were published between 1986 and 2014.

Turkish Abstract

Bu çalışma Türk yükseköğretimi bağlamında uzaktan eğitim alanında 1986 yılından 2014 yılına kadar yapılan doktora tezlerinin içerik analizi sonuçlarını sunmaktadır. Toplam 61 doktora tezi anahtar kelimeler, akademik disiplin, araştırma alanları, kuramsal/kavramsal çerçeveler, araştırma desenleri, araştırma modelleri, istatistiksel analizler, veri toplama araçları, katılımcılar, değişkenler/araştırma odakları ve alana katkı sağlayan kurumların belirlenmesi amacıyla incelenmiştir. Bu çalışmanın 1986 ve 2014 yılları arasında yayımlanan doktora tezlerinin incelenmesiyle araştırma eğilimlerinin belirlenmesi ve araştırma gündemi oluşturulması bağlamında Türk Uzaktan Eğitim alanına faydalı olacağı düşünülmektedir.

Keywords: Turkish distance education, open and distance learning, research trends, dissertations, content analysis.

Introduction

The globe has been witnessing a profound change, particularly in terms of scientific developments and social changes. Under these circumstances, as a multidisciplinary field, distance education (DE) has reacted to these changes, and it has been still evolving and orienting itself to fulfil this demand. Thus, as the demands of educators and learners evolve, it is crucial to understand and get a deeper insight of trends and issues in DE so as to keep abreast of these constant changes (Bozkurt et al., 2015).

The world of research and scholarly work are recognized as central to the role and function of universities. One of the major aims of higher education institutions is to contribute to the sustainable development and advancement of society through research. Research distinguishes universities from other educational institutions and such activities are useful in justifying the intellectual as well as supervisory role of faculty employed in conducting research (Hussain Shah & Gufran, 2013).

Understanding DE to the fullest extent is possible partially through examining changes in theory and practice as research conducted in the field reflects changes, dynamics, and perspectives. On this ground, it is a necessity to examine DE research in local and global perspectives. Therefore, dissertations are an important source of information to examine trends in any field because they have a role as a means of creating, distributing and disseminating scientific information. On this basis, this study was conducted to meet this demand and aims to define, analyze, and discuss the research trends and issues in DE in Turkish Higher Education context by examining the *grey literature*, in other words, dissertations.

A dissertation is a formal and lengthy scholarly publication that reports on a research project or study, or an extended analysis of a topic. It is planned to be a work of original research, represent critical thinking and it is written in partial fulfilment of the requirements for an academic degree or professional qualification. Dissertations are an important source of information, because they tend to be original and recent and are written to make a new and creative contribution to field of study. In addition to being original and substantial, they explain scientific procedure and the statements presented should be correct and defensible in a logical and scientific sense. Similar to review process in a scholarly journal article, a dissertation committee supervises dissertation research and writing. Within this scope, this study aimed to state, analyze, and discuss the research trends and issues in DE in the context of Turkish Higher Education by examining dissertations published from 1986 to 2015.

Review in Distance Education

There have been many attempts to investigate research trends in distance education. One of the first studies was conducted by Koble and Bunker (1997) that used content analysis technique in concert with Porter's forum analysis (1992) to review the articles in the American Journal of Distance Education (AJDE) from 1987 to 1995 (N=129 articles). The International Centre for Distance Learning's Classification System served as a research template for the synthesis of those published materials within this time period. As a later attempt, Berge and Mrozowski (2001) reviewed the research literature in the field of the DE including four popular, peer-reviewed, English-language distance education journals and the related dissertation abstracts, resulting in the review of 890 sources published from 1990 to 1999. Rourke and Szabo (2002) also used content analysis method to classify articles (N=235) on topic, research method, type, and biographical information about first authors in the Journal of Distance Education from 1986 to 2000. In 2004, Lee, Driscoll and Nelson examined research topics, methods, and citation trends in four journals; the American Journal of Distance Education (AJDE), the Journal of Distance Education (JDE), Distance Education (DE), and Open Learning (OL) covering a total of 383 articles. Davies, Howell and Petrie (2010) examined theses and dissertations (N=308) to explore and summarize research trends in DE over the period of 1998-2007. In that review, the four main variables; the topics addressed, research designs, data collection, and methods of analyses were compiled and studied. Unlike others, Ritzhaupt, Stewart, Smith and Barron (2010) performed a co-word analysis on the abstracts of research articles (N=517) in two prominent North American research journals, the American Journal of Distance Education and the Journal of Distance Education, for the articles published during the years of 1987 and 2005. The analysis produced some trends and themes within the three different developmental periods of Web: pre-Web, emerging Web, and maturing Web. Tuncay and Uzunboylu (2010) analyzed 9866 distance education documents from 160 selected sources that were judged to be relevant to the field of DE from 1972 to 2008. Documents were analyzed according to the document types, language of documents, documents from the sources, years of publication, authors and the most frequently used keywords. Hauser (2013) reviewed 382 research articles published from 2005 to 2012 in four prominent, peer-reviewed research journals to identify research trends regarding the use of quantitative, qualitative, or mixed research methods.

Zawacki-Richter conducted a series of studies to explore the research trends and issues in DE. The first study (Zawacki-Richter, 2009) used a Delphi technique to develop a classification system specific for the research areas presented in Table 1. The second study (Zawacki-Richter, Bäcker & Vogt, 2009) identified gaps and primary research topics in 695 articles published in five DE journals between 2000 and 2008. The third study (Zawacki-Richter & von Prümmer, 2010) was focused on the evaluation of gender role and collaboration patterns among researchers within the context of research methods, topics, and productivity. In a later study, Zawacki-Richter and Anderson (2014) provided a comprehensive survey on the state of online distance education as an independent field of inquiry, while also offering a clear orientation for future research. In a follow up study, Bozkurt et al. (2015) employed a content analytic approach and social network analysis to identify research trends and issues in DE by examining the research articles (N=861) published between 2009 and 2013 in seven journals, including the five covered by Zawacki-Richter, Bäcker and Vogt (2009). They organized research trends into the following categories: research areas, theoretical and conceptual frameworks, variables, methods, models, strategies, data collection and analysis, and participants. They also identified the most commonly used keywords and the most frequently cited authors and studies in distance education.

In addition to these studies, some scholars attempted to identify research trends and issues on a local scale rather than taking a global approach. Panda (1992) examined 142 studies on distance education in India since the first dissertation was published on the subject in 1972 under nine broad themes and concluded that only few of the dissertations have comprehensive and generalizable findings. Salar (2009) examined a total of 298 articles published in 15 Turkish peer-reviewed journals and twelve proceedings that belong with two different conferences. He used Berge and Mrozowski's (2001) categorization system and found that technology selection and adoption, learner characteristics, design issues, redefining roles of key participants, strategies to increase interactivity, and active learning issues were most common issues studied in Turkey. Descriptive studies are predominant to case study, correlational and experimental research. De Olivera Neto and dos Santos (2010) studied the methodological views and methods in the Brazilian distance education literature through the published articles (N=983) from 1992 to 2007. De Olivera Neto and dos Santos compared these studies in a binary analytical method to publications in the United States that were published within the related time period in the American Journal of Distance Education between 1987 and 2006.

Purpose and Research Questions

Distance education is prone to continuous change in line with developments in technology; a situation that opens the field up to new research areas in very short time spans. Understanding factors and the new dynamics in the field provides future researchers and practitioners with a comprehensive scheme of experiences, implications, practices, policies, programs, and perspectives.

Anderson and Zawacki-Richter (2014) state that, while it is a challenging task, it is important to create a research agenda. They further state their hope that individual researchers, institutional groups, and regional, national, and international agencies, associations, and networks will take up the challenge of drafting research agendas based upon research areas of DE (Table 1). More importantly, they express their hope that these organizations will fund, coordinate, and disseminate the results and then recursively generate new research agendas because the reward and benefits from improving the quality and quantity of research and ultimately the quality and quantity of online distance education warrants this effort. As a response to these concerns and need, and as a follow up study of previous research on a national ground, the main goal of this study is to review the research trends of DE in Turkish context over the period of 1986-2014.

For this purpose, the following research questions were explored: i) What are the most frequent/ly used keywords, academic disciplines, research areas, theoretical/conceptual frameworks, research designs, research models, tests and analysis, data collection tools, participants, and variables/research interests; and ii) what are the leading contributor institutions in DE research in Turkey.

Method

Research design

Content analysis is one of the research design methods that employs both qualitative and quantitative approaches to study empirical documentation with the purpose of grouping similar cases or data according to certain concepts and themes and then to organize and interpret the data systematically. In the content analysis, themes can be developed as an emergent model during the analysis or preset codes can be implemented.

For the current study, the content of the dissertations were coded according to preset categories and codes. Then, a descriptive analysis was implemented for the qualitative research characteristics such as frequencies and percentages. Qualitative variables for this study include research topics or purposes, research designs, and types of data collection and analysis techniques. A thematic analysis was employed to determine the most frequently addressed topics and most commonly used designs and methods to explore changes in these aspects in distance education research trends in dissertations for the period of 1986-2014.

Classification of Research Areas, Design, and Models

Zawacki-Richter (2009)'s classification system, presented in Table 1, was applied to the topics of dissertation research for this research. The reason for adopting these research categories and areas is its being rigorous and robust in terms of reflecting the views of experts in the field of DE. Additionally, the classification of academic disciplines is in line with the one utilized by the Turkish Council of Higher Education (TCHE). Categories related to research design and research model were largely adopted from those identified by Bozkurt et al. (2015).

Inclusion Criteria and Sample

Doctoral dissertations in Turkish higher education were reviewed for this study. TCHE has an electronic thesis/dissertation database in which all theses and dissertations that have been accepted are available for researchers. In this database, the keywords "distance education (DE), distance learning (DL), distance teaching (DT), open education (OE) and open and distance learning (ODL)" were searched in title, keywords, and abstracts of the dissertations. A total of 102 dissertations were retrieved for the years between 1986 and 2014. After initial examination, a total of 41 dissertations were excluded from the sample since 33 were irrelevant and 8 were restricted to access. Consequently, a total of 61 doctoral dissertations were included in the final sample.

Reliability

The research question regarding research areas (Table 1) in DE was coded in the first round by one rater. Another rater coded dissertations in the second round according to research areas they belong with. Inter-rater reliability of the second round coding was $\varkappa$ =.925. Altman (1991) proposed that the extent of agreement for Cohen's kappa can be qualified as poor (< 0.20), fair (0.21 to 0.40), moderate (0.41 to 0.60), good (0.61 to 0.80), and very good (0.81 to 1.00). Thus, the reliability of first and second raters can be considered as very good.

Table 1: Research areas of DE (Zawacki-Richter, 2009)

Macro level: Distance education systems and theories.

1. Access, equity, and ethics: The democratization of access to distance education afforded by new media and by finding ways to deliver high-quality education to those who have limited resources and poor infrastructure issues that refer to the (sustainable) provision of distance education in developing areas. What is the impact of distance education (e.g., via mobile learning) on narrowing the digital divide and what is the role of ICT (information and communication technologies) and/or OER (open educational resources) in terms of access to education?

2. Globalization of education and cross-cultural aspects: Aspects that refer to the global external environment and drivers, the development of the global distance education market, teaching and learning in mediated global environments, and the implications for professional development.

3. Distance teaching systems and institutions: Distance education delivery systems, the role of institutional partnerships in developing transnational programmes, and the impact of ICT on the convergence of conventional education and distance education institutions (hybrid or mixed mode).

4. Theories and models: Theoretical frameworks for and foundations of distance education, e.g., the theoretical basis of instructional models, knowledge construction, interaction between learners, or the impact of social constructivism learning theories on distance education practice.

5. Research methods in distance education and knowledge transfer: Methodological considerations, the impact of distance education research and writing on practice, and the role of professional associations in improving practice. Literature reviews and works on the history of distance education are also subsumed within this area.

Meso level: Management, organization, and technology.

6. Management and organization: Strategies, administration, and organizational infrastructures and frameworks for the development, implementation, and sustainable delivery of distance education programmes. What is required for successful leadership in distance education? Distance education and policies relating to continuing education, lifelong learning, and the impact of online learning on institutional policies, as well as legal issues (copyright and intellectual property).

7. Costs and benefits: Aspects that refer to financial management, costing, pricing, and business models in distance education. Efficiency: What is the return on investment or impact of distance education programmes? What is the impact of ICT on the costing models and the scalability of distance education delivery? How can cost effective but meaningful learner support be provided?

8. Educational technology: New trends in educational technology for distance education (e.g., Web 2.0 applications or mobile learning) and the benefits and challenges of using OERs, media selection (e.g., synchronous vs. asynchronous media), technical infrastructure and equipment for online learning environments, and their opportunities for teaching and learning.

9. Innovation and change: Issues that refer to educational innovation with new media and measures to support and facilitate change in institutions (e.g., incentive systems for faculty, aspects referring to staff workloads, promotion, and tenure).

10. Professional development and faculty support: Professional development and faculty support services as a prerequisite for innovation and change. What are the competencies of online teachers and how can they be developed?

11. Learner support services: The infrastructure for and organization of learner support systems (from information and counselling for prospective students about library services and technical support to career services and alumni networks).

12. Quality assurance: Issues that refer to accreditation and quality standards in distance education. The impact of quality assurance and high quality learner support on enrolments and dropout/ retention, as well as reputation and acceptance of distance education as a valid form of educational provision.

Micro level: Teaching and learning in distance education.

13. Instructional design: Issues that refer to the stages of the instructional design process for curriculum and course development. Special emphasis is placed on pedagogical approaches for tutoring online (scaffolding), the design of (culturally appropriate) study material, opportunities provided by new developments in educational technology for teaching and learning (e.g. Web 2.0 applications and mobile devices), as well as assessment practices in distance education.

14. Interaction and communication in learning communities: Closely related to instructional design considerations is course design that fosters (online) articulation, interaction, reflection, and collaboration throughout the learning and teaching process. Special areas include the development of online communities, gender differences, and cross-cultural aspects in online communication.

15. Learner characteristics: The aims and goals of adult learners, the socioeconomic Background of distance education students, their different learning styles, critical thinking dispositions, and special needs. How do students learn online (learner behavior patterns, learning styles) and what competencies are needed for distance learning (e.g., digital literacy)?

Findings and Discussion

This part of the study presents findings and discusses them by comparing to the results of previous research.

Keywords

Regarding the research question about keywords, a descriptive analysis was carried out. As a result of the initial analysis, 298 keywords were gathered from dissertations. Following that, 86 field specific keywords that define the field of DE were separated and ranked according to their frequencies. Two hundred and twelve research related keywords were excluded from keyword analysis as their frequencies are low and did not provide meaningful results. As a result of this analysis, distance education (42%) appeared as the most frequently used keyword as a generic term to define the field in Turkish higher education context. Frequencies of all keywords can be seen in the Figure 1.
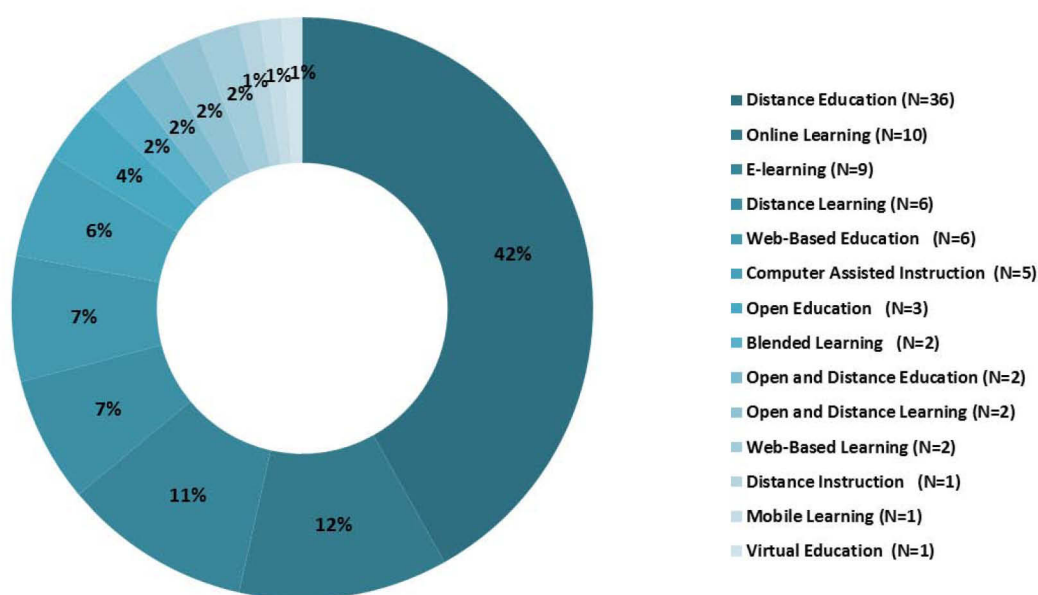

Figure 1. Frequencies of keywords used in dissertations

The finding of this research demonstrates a similar pattern with Bozkurt et al. (2015) as well as Tuncay and Uzunboylu (2010). Bozkurt et al. (2015) reported that *Distance Education* is the generic term that defines the field. They also found that online learning and e-learning are the other most frequently used keywords. This finding also confirms Tuncay and Uzunboylu (2010) who found that the most frequently used keyword was *Distance Education*.

Academic Discipline

The classification of academic discipline of doctoral dissertations is defined by TCHE. The authors of dissertations are asked to select one or more of the most appropriate discipline regarding their dissertation when they submit them to TCHE. Based on this classification, it was observed that DE is strongly related to the discipline of *Education and Training*. This finding further suggests that DE is a multidisciplinary field. Communication Sciences (12.4%), Science and Technology (10.1%), Computer Engineering and Computer Science and Control (6.7%), Business Administration (6.7%), and Nursing (3.4%) follow education and training (51.7%) discipline (Table 2).

Table 2: Frequencies of academic disciplines

Discipline*	Frequency	Percentage
Education and Training	46	51.7
Communication Sciences	11	12.4
Science and Technology	9	10.1
Business Administration	6	6.7
Computer Engineering and Computer Science	6	6.7
Nursing	3	3.4
Advertising	1	1.1
Clothing Industry	1	1.1
Home Economics	1	1.1
Journalism	1	1.1
Linguistics	1	1.1
Mechanical Engineering	1	1.1
Political Science	1	1.1
Public Relations	1	1.1
TOTAL	89	100

Name of the disciplines originally belong to TCHE

Zawacki-Richter and Anderson (2014, p.9) stress that the majority of the research in DE is about *teaching* and *learning*. Based on a social network analysis (SNA), Bozkurt et al. (2015) also concluded that learning and education are important themes in DE research in a macro perspective. The results revealed within Turkish DE context confirm conclusions from Zawacki-Richter (2014) and Bozkurt et al. (2015) studies. These findings also demonstrate that DE has tight relationships with communication sciences, science and technology, computer engineering and computer science and control and business administration.

Research Areas

Classification developed by Zawacki-Richter (2009) was utilized in this research to identify the research areas in Turkish DE context. Dissertations were analyzed and coded according to three levels of classification. Surprisingly some research areas especially in macro level were ignored in Turkish DE context. As can be seen in Figure 2, instructional design and learner characteristics in micro level, distance teaching systems and institutions in macro level, and educational technology in meso-level drew significant attention in dissertations. In a detailed investigation, it is observed that these four research areas were dominant between 1986 and 2014 and there hasn't been a distinctive increase or decrease. It is also explicit that these four research areas have strong ties among them. They are all related to each other and tightly interconnected. Change in one research area trigger other research areas and cause sort of a domino effect. For instance, ever changing learner characteristics and advances in educational technology make the adaption process hard for instructional design domain and distance teaching systems and institutions

Micro- and meso-level research topics investigated in the DE dissertations while broader research areas in macro level largely untapped in Turkey. There is a strong need to explore these untapped research areas to be able to fully explore DE and develop DE as an interdisciplinary area.
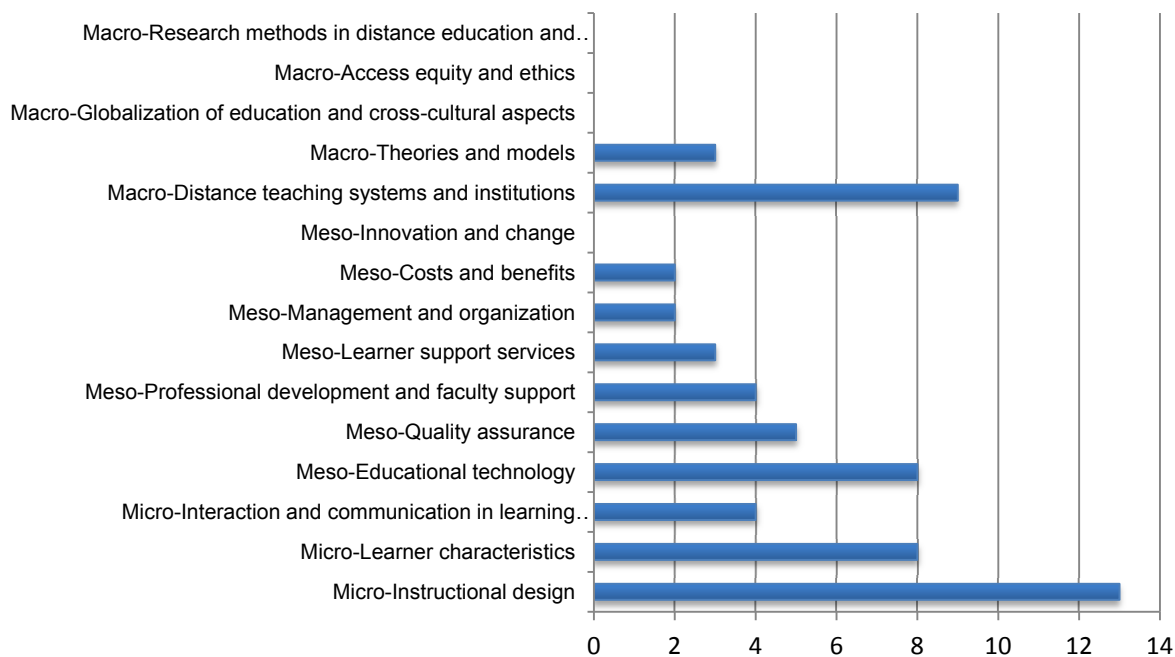
Figure 2. Research areas

Similar to previous research results by Zawacki-Richter, Bäcker and Vogt (2009) and Bozkurt et al. (2015), there is an imbalance between three levels of research areas. It is clear that both in global (Bozkurt et al., 2015; Zawacki-Richter, Bäcker & Vogt, 2009) and local perspectives, the same pattern of imbalance exists. Interestingly, some research areas such as research methods in distance education and knowledge transfer; access, equity, and ethics; globalization of education and cross-cultural aspects in macro level, and innovation and change in meso-level have not been studied so far. In terms of Turkish higher education context, this finding is also important as the most favoured research areas in addition to the most ignored ones are portrayed through this analysis. Peters (2014) highlighted that there is a similar pattern on research areas that have been neglected including topics such as costs and other economic considerations, student dropout rates, issues of social justice, the influence of cultural factors and the need for sensitivity to those factors, provisions for faculty professional development, and the role of learner communities. With an effort to compensate for this gap, Zawacki-Richter and Anderson (2014) gave a close and thoughtful attention to neglected research areas in addition to mostly researched areas in their book *Online distance Education: Towards a Research Agenda*.

Theoretical/Conceptual Framework

Theoretical and/or conceptual frameworks reported directly in dissertations were counted and ranked according to their frequency. It was observed that 40 dissertations out of 61 did not report any theoretical/conceptual framework. Some dissertations reported one or more theoretical and/or conceptual frameworks (Figure 3).

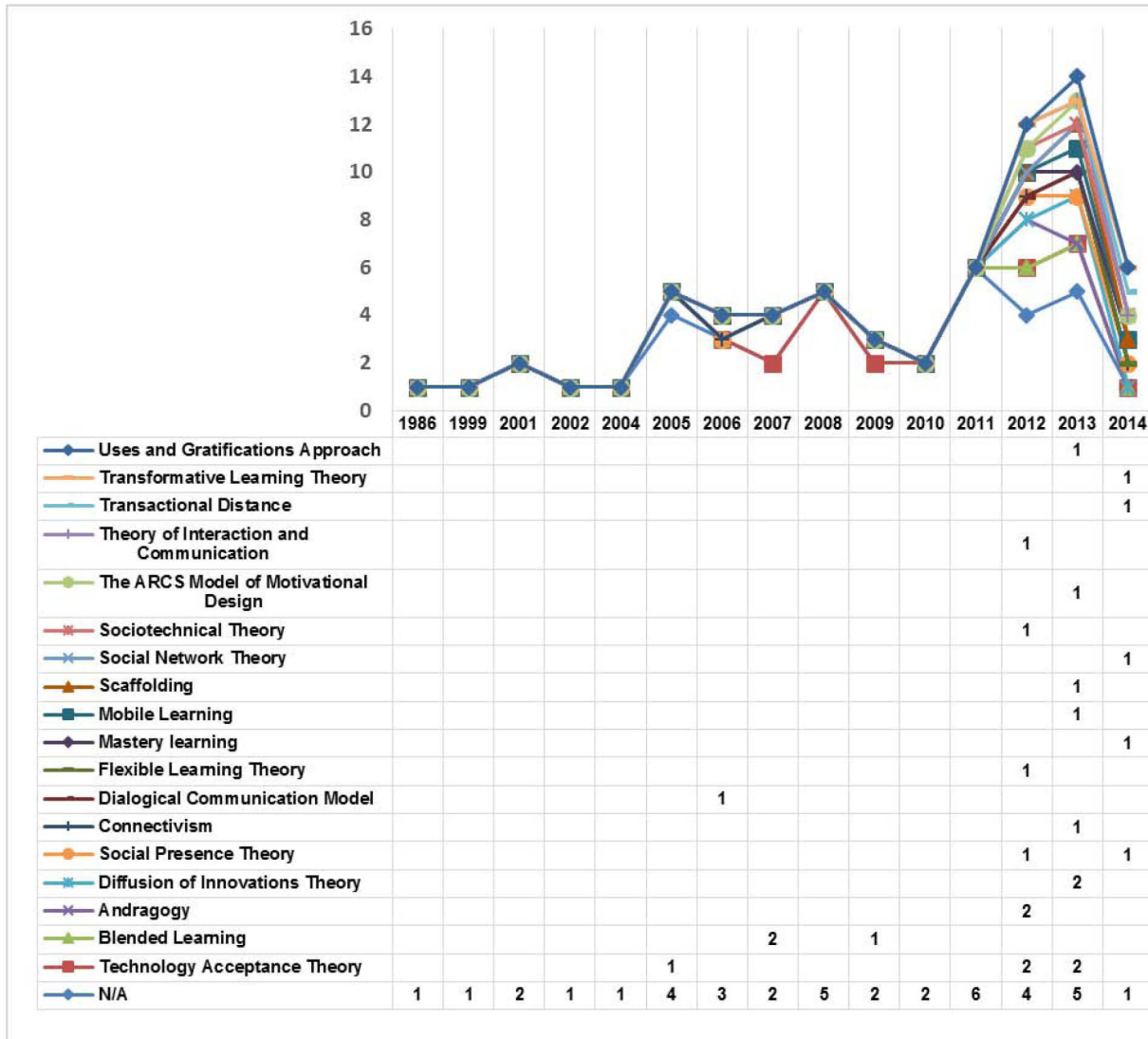|	1986	1999	2001	2002	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Uses and Gratifications Approach														1	
Transformative Learning Theory															1
Transactional Distance															1
Theory of Interaction and Communication													1		
The ARCS Model of Motivational Design														1	
Sociotechnical Theory													1		
Social Network Theory															1
Scaffolding														1	
Mobile Learning														1	
Mastery learning															1
Flexible Learning Theory													1		
Dialogical Communication Model							1								
Connectivism														1	
Social Presence Theory													1		1
Diffusion of Innovations Theory														2	
Andragogy													2		
Blended Learning							2			1					
Technology Acceptance Theory						1							2	2	
N/A	1	1	2	1	1	4	3	2	5	2	2	6	4	5	1

Figure 3. Frequencies of reported theoretical/conceptual frameworks in dissertations
*One study may employ more than one theoretical/conceptual frameworks

Among few theories/concepts, Technology Acceptance Model that explains how users come to accept and use a technology; Blended learning which is a flexible approach that combines both face-to-face and online dimensions of teaching and learning; Andragogy which is a study of adult learning, and Diffusion of Innovations Theory that explains how, why, and at what rate new ideas and technology spread through cultures; and Social Presence which is the degree to which a person is perceived as real in mediated communication were most preferred theoretical/conceptual backgrounds.

It is also clear that actual use of theories/concepts in dissertations started after 2011 in Turkish DE context. There can be a couple of reasons behind this scene. First of all, though DE practice has a long history in Turkey, research in DE dissertations has matured recently. It can be also concluded that the earlier dissertation research was descriptive and aimed to understand DE. However, it seems to be there is currently a quest to explore DE in recent dissertations on the ground of some theoretical/conceptual frameworks. Additionally, as it can be seen in Table 2, dissertations in DE cover a wide range of disciplines. Theoretical/conceptual frameworks employed in DE dissertations are mostly originated from education and communication fields. On this basis, it can be claimed that dissertations conducted in different disciplines usually ignored use of theoretical/conceptual frameworks and presented descriptive research findings.

Theory is important to the study of DE because it directly affects DE by guiding the practice and research (Simonson, Schlosser & Hanson, 1999). According to Keegan (1983) "a firmly based theory of distance education will be one which can provide the touchstone against which decisions -political, financial, educational, social- when they have to be taken, can be taken with confidence" (p.3). Perraton (1988) further argues that "without a theoretical basis, research is unlikely to go beyond data gathering" (p.1). Theories allow researchers to see the big picture and make it possible for them to view their practice and research from a broader perspective. This broader perspective helps researchers to make connections with the work of others, facilitates coherent frameworks and deeper understanding of their actions, and perhaps most importantly, to transfer the experience gained in one context to new experiences and contexts (Anderson, 2008). In sum, the importance of theory was stressed with a great emphasis in literature, yet the current study reveals a controversial and critical finding. Dissertations in Turkish DE context lack a theoretical footing. A total of 40 dissertations, which constitute 58.8% of all dissertations in Turkish DE context, did not use any theoretical/conceptual framework to explain their research topic through the lens of theories and/or concepts. However, the increasing trend in the use of theoretical/conceptual frameworks (Figure 3) is also noteworthy.

Dissertations that didn't employ any theoretical/conceptual frameworks were about developing a technology for DE or literature reviews that focus on a specific topic. Not all the dissertations were purely descriptive, but they simply presented research findings rather than discussing their findings using lens of a theoretical/conceptual framework.

Most of these dissertations were mostly from science and technology, communication sciences, science and technology, business administration, computer engineering and computer science and control, and other disciplines indicated at the Table 2. This might be a misshaped perception of DE by other disciplines of which perceive DE as a sole application of education rather than an interdisciplinary area with its own theoretical/conceptual footings.

Research Design

Dissertations were analyzed and categorized according to quantitative, qualitative, or mixed research designs for each year. The results of this analysis exhibited that DE dissertations in Turkish higher education context employed quantitative (36%), mixed (33%), and qualitative (31%) research designs (see Figure 4) almost equally. The overall picture of DE research design presents a balance of three research strategies. However, when the results are tabulated according to the year of the study, it is observed that there is a rise in the use of mixed research over the years (see Figure 5).
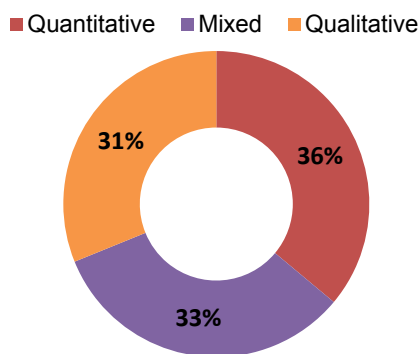

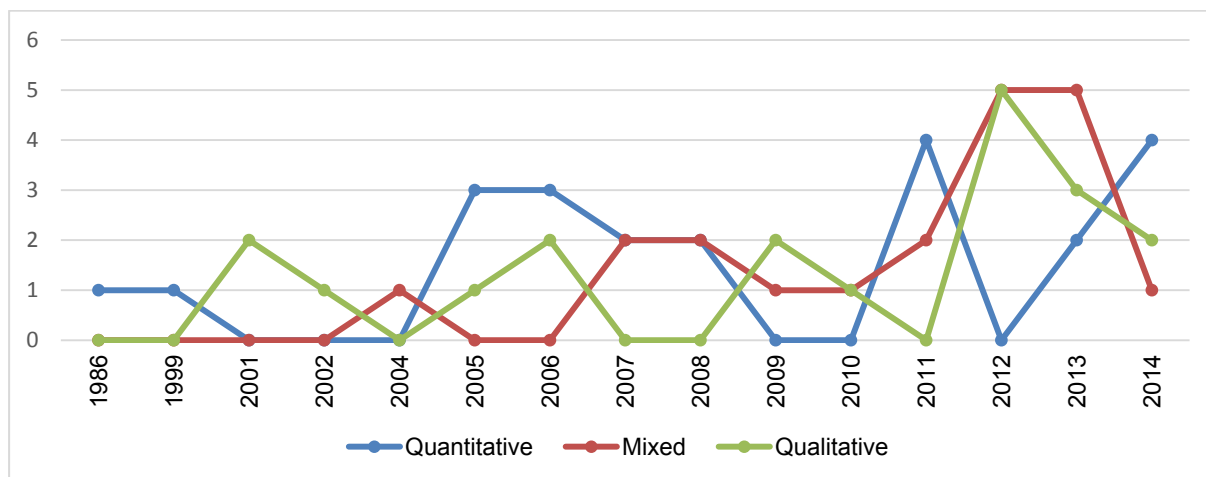Figure 4. Research designs in dissertations

Figure 5. Use of research designs per year in dissertations

Zawacki-Richter et al. (2009) reported rates of 29.1% quantitative, 19.9% qualitative, 12.9% mixed, and 38.1% other research designs for 2000-2008 research trends (N=695). Bozkurt et al. (2015) reported that researchers in DE usually preferred qualitative (47%), quantitative (37%), or mixed (16%) research designs (N=861). Similarly, Hauser (2013) reported that 189 articles (49%) out of 382 utilized a qualitative research design in four prominent DE journals. When compared, in contrast to previous research in global perspective, researchers in Turkish DE context mainly preferred quantitative, mixed and qualitative research design in local perspective and the rate of mixed research design has been increasing since the beginning of 2000s.

Research Model

The analysis regarding the research models of DE research in Turkish higher education context demonstrates remarkable results. According to analysis of research models employed in dissertations in Turkey, within the models of quantitative research design (36%), experimental research design (n=14) was the most preferred type of research in dissertations. Survey and correlational research models followed the experimental model.

Of all the mixed research models (33%), a great majority of dissertations preferred explanatory sequential model (n=10). Exploratory sequential, embedded, convergent parallel, and multiphase models followed the explanatory sequential model.

Within the models of qualitative research design (31%), case study (n=13) was the most frequent utilized research model. Action research, content analysis, and ethnography research models followed the case study (see Table 3).

Table 3: Frequencies of research models used in dissertations

Quantitative 36% (N=22)

Experimental			Survey							Correlational		Meta-analysis	Causal comparative
14			7							1		0	0
True Exp.	Quasi-exp.	Factorial	Longitudinal			Cross-sectional				Prediction	Comparative		
			Trend	Cohort	Panel	Program Evaluation	Group Comparison	Attitudes and practices	Community needs	National assessment			

Mixed 33% (N=20)

Explanatory sequential	Exploratory sequential	Embedded	Convergent parallel	Multiphase	Transformative
10	6	3	1	1	0

Qualitative 31% (N=19)

Case Study	Action research	Content Analysis	Ethnography	Grounded theory	Design-based research	Phenomenology	Meta-Synthesis	Narrative	Historical	Heuristic
13	2	2	1	0	0	0	0	0	0	0

These findings yield some interesting results and demonstrate a different pattern in addition to some similarities when compared to research trends in global perspective. For example, Berge and Mrozowski (2001) found that 666 (74.8%) of the 890 articles were descriptive, 112 (12.6%) were case study, 59 (6.6%) were correlational, and 53 (6%) were experimental inquiries. Lee, Driscoll and Nelson's (2004) research revealed that 78 (20%) of the 383 articles published in the four journals described theoretical inquiry, 47 (12%) were experimental research, 138 (36%) were case studies, 23 (6%) were evaluation research, 26 (7%) were developmental research, 48 (13%) were survey research, and 23 (6%) were implemented with combined inquiries. Bozkurt et al. (2015) reported that mixed research design constituted third in rank and the exploratory (55%) model and the explanatory (31%) model constitute the majority of preferred research models. Convergent parallel (8%), embedded (4%), and multiphase (2%) models followed as the other mixed research models that are preferred by the researchers between 2009 and 2013. Of all qualitative research design, case studies (66%), design-based research (9%), phenomenology (7%), action research (5%), grounded theory (4%), ethnography (3%), content analysis (2%), meta-synthesis (1%), narrative (1%), historical (1%) and heuristic (1%) research models are generally preferred by researchers. Of all quantitative research design models, a great majority of studies preferred survey (58%), correlational (29%), experimental (11%) model, and meta-analysis (2%).

When research findings analyzed chronically, it can be seen that there is an increase in use of different research model after 2004 and the real increase can be observed after 2010. When compared, it can be seen that there is a similar pattern with use of theoretical/conceptual framework (see Figure 6).
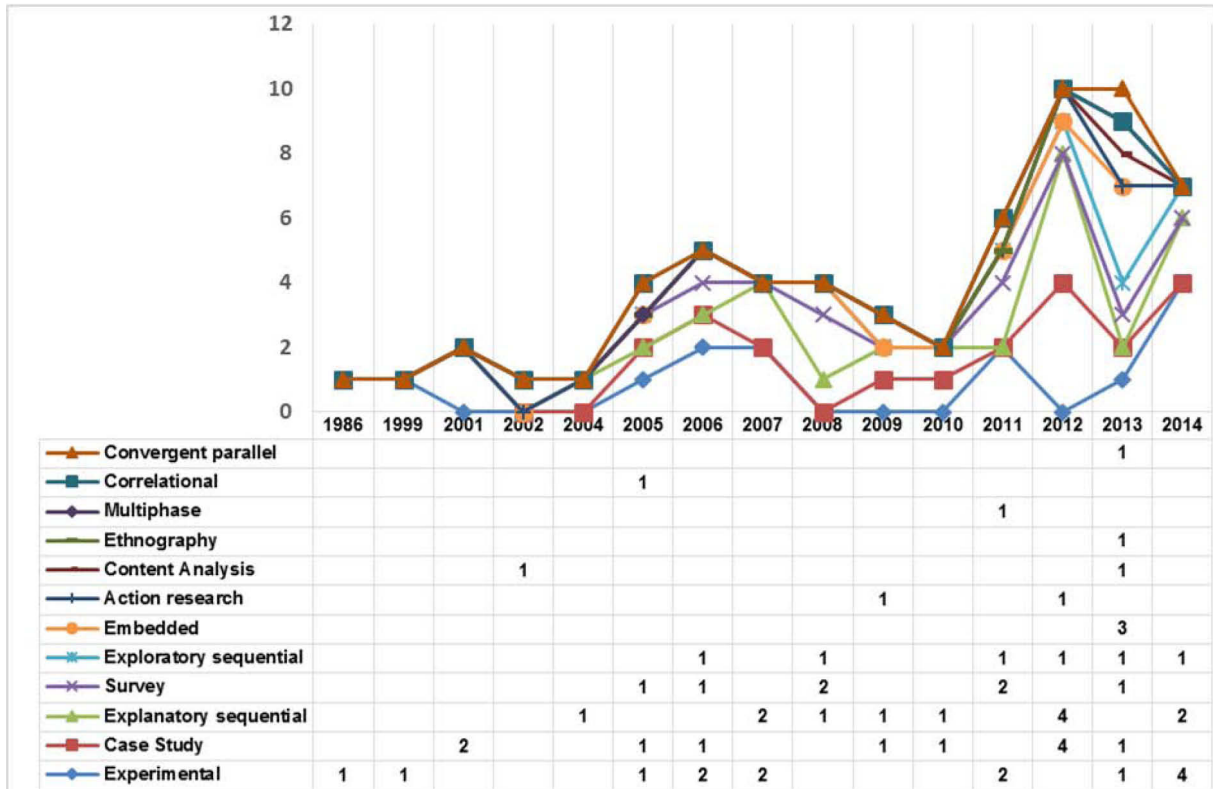
	1986	1999	2001	2002	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Convergent parallel														1	
Correlational				1											
Multiphase												1			
Ethnography														1	
Content Analysis				1										1	
Action research										1			1		
Embedded														3	
Exploratory sequential							1		1			1	1	1	1
Survey						1	1		2				2	1	
Explanatory sequential					1				2	1	1		4		2
Case Study			2			1	1			1	1		4	1	
Experimental	1	1				1	2	2				2		1	4

Figure 6. Use of research designs per year in dissertations

Tests and Analysis

Table 4 presents the number of data analysis techniques that were explicitly reported in the articles. The findings demonstrate that quantitative research studies used inferential (64%) and descriptive (36%) tests. In addition to that, qualitative research studies used content (63%) and thematic (37%) analysis in the same ratio.

Table 4: Tests and analysis

QUANTITATIVE					
Statistical tests					
Descriptive (36%)		Inferential (64%)			
		Parametric (82%)		Non-parametric (18%)	
Central Tendency (mean-median-mode)	14	t-test	17	Chi-square	5
Relative Standing (percentage/ z-score)	10	Variance analysis (ANOVA/MANOVA/MANCOVA)	16	Mann Whitney U	3
Variability (Variance-Standard Deviation-Range)	9	Correlation (Pearson)	8	Wilcoxon Test	3
Descriptive statistics (not specified)	5	Reliability analysis (Cronbach's Alpha)	7	Kruskal Wallis Test	1
		Regression analysis	4		
		Factor Analysis (Confirmatory/Exploratory)	2		
		Structural Equation Modeling (SEM)	2		

QUALITATIVE	
Interpretive Analysis	
Content analysis	19 (63%)
Thematic analysis	11 (37%)

Lee, Driscoll, and Nelson (2004) specified to report the scope of statistical methods of experimental studies. They reported that the researchers in the field frequently have used ANOVA (N=8), chi-square (N=8), factor analysis (N=8) and regression (N=8), all of which constitute 68% of all statistical methods (N=47) used in experimental studies. Correlation, t-test, path-analysis, meta-analysis, MANOVA, and cluster analysis were other statistical methods employed with 32%. In their analysis, Davies, Howell and Petrie (2010) found that the frequent use of quantitative statistical analysis techniques involving t-tests and ANOVA analysis. They concluded that the use of such data analysis techniques seems high, given the data collection methods employed. One observation from the coding of manuscripts that might help explain this apparent inconsistency is that doctoral candidates often used such analyses to make comparisons in survey results based on disaggregated groups of respondents. When compared to Bozkurt et al. (2015), who reported that descriptive (51%) and inferential statistical tests (49%) were generally expressed in a global perspective. It can be seen that in Turkish DE context, there is a shift from descriptive to inferential statistical test to be able understand more by employing inferential statistics rather than using descriptive statistics which provides a superficial picture of the analyzed data. In terms of qualitative analysis, there is a strong similarity, which is most likely because of the limited number of analysis in qualitative research model. They also reported that qualitative interpretive analysis generally used content (49%), thematic (48%), and discourse analysis (3%). When compared, these findings also demonstrate a similar trend in terms of qualitative analysis with Bozkurt et al.'s (2015) findings.

Data Collection Tools

This part of the study presents trends of data collection tools. According the research findings, questionnaire (31.7%) and interview (24%) were the most frequently preferred data collection tools. Together they constituted 55.7% of all the listed research instruments. Scale (18.3%), documents (9.6%), focus group (6.7%), observation (3.8%), pre-test/post-test (2.9%), and web pages (2.9%) are the other data collection tools that are used in DE dissertations in Turkey (see Table 5).

Table 5: Data collection tools

Data collection tools	Frequency	Percentage
Questionnaire	33	31.7
Interview	25	24.0
Scale	19	18.3
Documents	10	9.6
Focus group	7	6.7
Observation	4	3.8
Pre-test/post-test	3	2.9
Electronic documents (Web pages)	3	2.9
TOTAL	104	100

*One study may employ more than one data collection tool

Davies, Howell and Petrie (2010) reported that the most frequently used data collection tools were survey (qualitative and quantitative) (N=192), interviews (N=118), existing artifacts (document analysis) (N=59), observations (N=17), researcher created assessments (N=16), existing test scores (N=16) and standardized assessments (N=15).

These findings demonstrate high similarity with Bozkurt et al. (2015) who reported that survey (43%) as a quantitative data collection instrument, interviews (24%) and document analysis (21%) as qualitative data collection instruments were the most preferred data collection tools which accounted for %88 of all the listed data collection tools.

When compared, it is clear that there is a strong similarity with current findings. Questionnaire (for qualitative and quantitative data) and Interview (for qualitative data) seem to be principal source of data collection both in local and global perspectives.

Participants

The most frequently studied participants were undergraduate students and academicians which constitute 55.8% of all listed sampling groups. Other sampling groups are academicians, adult learners, systems/programs, documents, institutions, K12-teachers, specialists, K12-administrators, master students, administrators, consumers, K12-students, lecturers, nurses, and police forces (see Table 6).

Table 6: Participants in dissertations

Participants	Frequency	Percentage
Undergraduate Students	30	42.9
Academicians	9	12.9
Adult Learners	5	7.1
System/Program	4	5.7
Document	3	4.3
Institutions	3	4.3
K12-Teachers	3	4.3
Specialists	3	4.3
K12-Administrators	2	2.9
Master Students	2	2.9
Administrators	1	1.4
Consumers	1	1.4
K12-Students	1	1.4
Lecturers	1	1.4
Nurses	1	1.4
Police Forces	1	1.4
Total	70	100

*One study may employ more than one target group

These findings present a similar pattern with Bozkurt et al. (2015). They reported that target groups in the studies examined were undergraduate students (31%), post graduate students (10%), and academicians (10%) which demonstrate that 51% of the sampling groups are from higher education. The current study also demonstrates that there is a little interest towards K12 and it can be further interpreted that DE in Turkey mainly focuses on higher education.

Variables/Research Interests

For this research question, variables/research interests reported in the dissertations were coded into categories, counted and then ranked by their frequencies. Attitude and academic-performance are mostly studied variables/research interests in Turkish DE research. Satisfaction, perception, success, effectiveness, motivation, expectation and readiness are other variables/research interests (see Table 7). These findings confirm Bozkurt et al. (2015) in a general view. They reported that variables usually focus on the feelings, emotions and behaviours of the learners.

Table 7: Variables/research interests in dissertations

Variables/research interests	Frequency	Percentage
Attitude	18	26.1
Academic-performance	12	17.4
Satisfaction	10	14.5
NA	8	11.6
Perception	6	8.7
Success	5	7.2
Effectiveness	4	5.8
Motivation	4	5.8
Expectation	1	1.4
Readiness	1	1.4
TOTAL	69	100

*One study may employ more than one variable/research interest

Leading Contributor Institutions

Of all the universities, Anadolu University, which is the first largest university both in Europe and Turkey and second largest all around the world, is distinctly the leading contributor to DE literature in Turkey. However, considering the fact that it was founded in 1982, it can be argued that Anadolu University as a mega university (Daniel, 1998) which has been providing DE since 1982 has relatively few numbers of dissertations covering the field of distance education though it has a 32 years of experience by 2014. However, Kocdar and Karadag (2015) state that Anadolu University is one of the 18 universities that were identified in 12 different countries for 27 distance education expertise degree-granting programs. The master with thesis, master with non-thesis and doctorate programs at Anadolu University has a recent history and this situation can be further interpreted that Anadolu University will contribute more to DE literature and continue to be major player in DE in Turkey.

The research question regarding leading contributors in Turkish higher education context also exhibits interesting results. İstanbul University and Erzurum Atatürk University which had a fresh start in distance education led insufficient number of dissertations concerning field of DE. Additionally, all the universities listed were public universities (see Table 8). Considering that there are 73 private universities compare to 123 public universities by the year 2014 in Turkey, it is puzzling to observe that private universities did not contribute in DE dissertations at all. Furthermore, when analyzed cumulatively and compared in the global scale, surprisingly there is little interest towards DE research in higher education even though there is a well-established DE system in Turkey.

Table 8: Leading contributor universities in dissertations

INSTITUTIONS	1986	1999	2001	2002	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
Anadolu University	1	1	1			1	1		1	3	2	3	4	4	2	24	39.3
Gazi University							1	1	2				1	1		6	9.8
Marmara University				1			1					1	1	2		6	9.8
Ankara University						1			1				1		3	6	9.8
Middle East Technical University			1		1	1		1								4	6.6
Sakarya University													2		1	3	4.9
Fırat University							1					1				2	3.3
İstanbul University						1		1								2	3.3
Mersin University													1	1		2	3.3
Atatürk University								1								1	1.6
Dokuz Eylül University							1									1	1.6
Ege University												1				1	1.6
İnonu University															1	1	1.6
Karadeniz Technical University														1		1	1.6
Selçuk University														1		1	1.6
TOTAL	1	1	2	1	1	4	5	4	4	3	2	6	10	10	7	61	100

Limitations and Strengths

The current study has some strengths and limitations. First of all, only doctoral dissertations were included in this research with an assumption that they are final product of learners in higher education system and reflect experience and intellectual accumulation of knowledge for the future academicians. In addition to that, eight dissertations were excluded from research as they were not accessible in full texts.

On the other hand, this research presents the topology of Turkish DE research by including all dissertations accepted from 1986 to 2014 and examining them from various perspectives. This research is also the first content analysis attempted to identify DE research in Turkish higher education context. On this ground, it is believed that the findings of the current study will provide a base for future research related to DE trends and issues.

Conclusion

This study was carried out to identify research trends and issues in the field of DE within the scope of doctoral dissertations conducted in Turkish higher education context from 1986 to 2014. Dissertations in Turkish higher education context are dominantly related to education and training. They are also related to communication sciences, science and technology, business administration and computer engineering and computer science. Regarding the research areas, there is an imbalance and some of the research areas have not been studied frequently. Distance teaching systems and institutions in macro level, educational technology in meso-level, and instructional design in micro level are the most commonly studied research areas. A great majority of the dissertations lack a theoretical/conceptual background. Quantitative, mixed, or qualitative research designs are employed almost equally and also there is an increasing tendency to use mixed research design in the last decade. In contrast to the harmony in research design, specific research models are more frequently utilized than some others. Experimental, explanatory sequential, and case study research designs were the most preferred type of research

models in quantitative, mixed method, and qualitative studies respectively. When the tests and analysis examined, it can be seen that inferential statistical tests are used mostly in addition to descriptive statistical test. Questionnaire and interview are generally used to collect data and undergraduate students were the dominant sampling group. Attitude, academic performance, and satisfaction are the most commonly investigated variables/research interests. Finally, Anadolu University as the largest mega university in Europe and the second largest in the world is the leading contributor university where the largest number of dissertations are conducted.

In all, considering the findings of this research, the following implications should be taken into consideration in future research:

- The neglected research areas should be studied more to have a comprehensive understanding of the Turkish DE context. Thus, universities in Turkey should plan their research agenda to identify gaps and priority areas and to explore potential research directions.
- Researchers in Turkish DE context employ theoretical/conceptual frameworks occasionally. However, theories influence both practice and research and help researchers explain and understand the relationships of a phenomena in a broader perspective by providing strong pillars. Thus, researchers in Turkish DE context should focus on the use of theories/concepts with a multidisciplinary approach.
- The sampling groups of dissertations are dominantly undergraduate students and it should be diversified and enlarged to be able to collect data from a wide spectrum of participants by including other sampling groups who engage in DE in Turkey.
- There seems to be harmony in the selection of research designs. However, there should be more mixed model dissertations since they combine both quantitative and qualitative studies and present a deeper understanding in addition to robust research results.
- In mixed, qualitative, and quantitative studies, a specific research model is usually more preferred compared to others in Turkish DE dissertations. It is suggested to employ other research models to enrich research results to be able to examine research phenomena from different perspectives.
- Finally, universities that provide distance education should promote dissertations which cover both practice and theory of DE. Distance Education should be prioritized in their research agenda considering that nearly half of the dissertations in DE Turkish context are conducted in one specific university, other higher education intuitions should be encouraged to put emphasis on DE research in general and dissertations specifically.

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