

# Content Analysis of Distance Education in Pakistan: A Trends Study of AllamaIqbal Open University Islamabad

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## Abstract

This study intended to present the outcomes of the content analysis on doctoral dissertations in the field distance education submitted to AllamaIqbal Open University Islamabad (AIOU), Pakistan between 2001 and 2014. A total of 32 dissertations were reviewed to identify trends in terms of research design, data collection instruments, sources of data, data analysis tools, research areas, research models, participants and research interests/variables. Hence, this study holds a key value in helping the supervisors, students and practitioners to conduct the research in under-researched areas in distance education at AIOU in Pakistan.

**Keywords:** Doctoral Dissertations, Content Analysis, Research Trends, Distance Education, AllamaIqbal Open University.

## 1. Introduction

The distance education has evolved as a result of emergence of novel pedagogical technologies in the field of education (Perraton, 2012; Aderinoye and Ojokheta, 2004). Due to dynamicity and evolving nature of the technological field, the scholars have argued that area of open and distance education is subject to developments, afresh pedagogical practices, novel methods of delivery of curricular contents, and more and more areas being included in the distance education (Keegan, 2012). The research activities coupled with technological advances improved the delivery and propagation of distance education to the target consumers at unprecedented pace (Gooley and Lockwood, 2012; Larreamendy-Joerns and Leinhardt, 2006). The level and nature of the research work conducted in the field of distance education can be considered a hallmark for the identification of the development patterns in the distance education. This study has been designed to assess the changes in the research areas and methodologies which are precipitated in the distance education in Pakistani higher education sector (Casey, 2008; Lockwood, 2013).

There are several other educational institutions in public and private sector of Pakistan, which offer the limited academic programs at bachelor and master level of education in the area of distance education in Pakistan. However, AllamaIqbal Open University (AIOU) is the only higher education sector which delivers the doctoral level degrees in various subjects in Pakistan. Currently, there is a limited empirical and theoretical knowledge regarding the research trends, research productivity in the distance education in Pakistani Higher Education. The scholars argued that AIOU is an important academic institution which is working towards the promotion and development of distance education in Pakistan, which not only caters the needs of

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local students, but it also offers the academic service in distance education to the international students (Iqbal and Ahmad, 2010; Ali et al., 2011).

However, there is a less clarity about the nature of the research activities types of research projects, methods used to address the research issues in doctoral dissertations at AIOU in Pakistan. The assessment of research productivity and trends and issues in the PhD level dissertations produced by AIOU can offer a valuable insight into the over-researched areas and ignored areas of the research in distance education. Scholars have argued that identification of the research trends enables the academic institutions and policy makers in higher education to identify the changes in the mode of research endeavours over time. The examination of research trends in distance education is also helpful in triggering the formulation of remedial solutions to carry out the development of open and distance educations smoothly to serve the social and community needs and to stay attuned with the dynamic technological changes in the Higher Education. Therefore, this study is designed to assess the research trends in doctoral level distance education dissertations produced by researchers at AIOU in Pakistan between 2001 to 2014.

### **1.1 Objectives of the Study**

1. To explore the research areas which are over-represented in doctoral dissertations between 2001-2014
2. To examine the research areas which are under-represented in doctoral dissertations between 2001-2014
3. To assess the frequently used methodological perspectives (research design, research models, participants, data analysis tools, data collection instruments, distribution methods for data collection instruments) in the doctoral dissertations between 2001-2014

### **1.2 Research Questions**

1. What are the research areas which are over-represented in doctoral dissertations between 2001-2014?
2. What are the research areas which are under-represented in doctoral dissertations between 2001-2014?
3. What are the frequently used methodological perspectives (research design, research models, participants, data analysis tools, data collection instruments, distribution methods for data collection instruments) in the doctoral dissertations between 2001-2014?

### **1.3 Significance of the Study**

The findings of this study hold importance for the academic institutions to maintain the healthy and sustainable development of research activities in distance education in Pakistan. This study carries a novelty in terms of performing an empirical research for analysing and monitoring the developments of research initiatives by the AIOU over last decade in the field of distance education. The results of this study would also help the supervisor and policy-makers at AIOU to follow the technological advances in distance education, so that development and delivery of distance education can be provided to the students with the highest quality. Based on the outcomes of this study, the contribution of the AIOU in the field of distance education can be improved, which would be beneficial for launching the constructive changes in the design and conduct of the research activities. The ignored areas identified through this study can be utilized by the supervisors at AIOU and policy-makers at Higher Education Commission (HEC) to streamline the themes and design of research work carried out at doctoral level in AIOU.

Consequently, this can help an even distribution of research efforts and resources across all key areas in the distance education in Pakistani Higher Education.

## **2. Literature Review**

The analysis of the research trends in distance education was initiated back in 1990. The earliest attempts made by researchers to identify the research trends in distance education was made between 1990s and 2000, which focused only on the themes and areas explored by the researchers in distance education in the articles published in different journals. For instance, Kolbe and Brunker (1997) examined the research trends in 129 research articles published in the American Journal of Distance Education, and revealed that researchers have mostly focused on the application of the quantitative studies to address the issues in distance education. However, they found that mixed methods were used least in the research papers. Similarly, Mishra (1997) examined the research trends in papers published in 4 key journals in distance education between 1991 and 1996: Distance Education, The Journal of Open and E-learning, Indian Journal of Open Learning, and American Journal of Distance Education. They found that most frequently used methodology was descriptive one, and most used data collection instrument was questionnaire. They further reported that most of the studies conducted in the area of distance education were conducted in England; they were related to perceptions of students pertaining to the utility of distance education.

Identification of research trends in distance education was performed by Berge and Mrozowski (2001) using the content analysis on the 890 research articles from Open Learning, Distance Education, Journal of Distance Education and the American Journal of Distance Education published between 1990 and 1996. They employed the method developed by Sherry (1996) called the categorization method; they revealed that descriptive studies were performed in the highest proportions in distance education. They reported that descriptive studies showed increasing year-wise trend, while the case studies, experimental and correlational studies did not demonstrate either increasing or decreasing trend in the distance education research.

Lee et al (2004) examined 361 research papers published in different journals between 1997-2002, and found that case study approach was the most commonly applied methodology. The theoretical topics dominated the research work published between 1997 and 2002 in journals of open and distance education. Zawacki-Richter (2009) conducted a study on participants from 11 countries ((Australia, Brazil, Canada, China, Fiji, Germany, Ireland, New Zealand, South Africa, England and USA) for the classification of open and distance education. Based on the perceptions and views of the people taking part in the study, they categorized the distance education into three broader categories: macro category, meso-category and micro-category.

Zawacki-Richter et al (2009) analyzed 695 research papers published in five key journals related to open and distance education between 2000 and 2008, and revealed that most of the research papers covered the areas of research on “interaction and communication in learning environments”. However, few studies were focused on the research areas associated with “costs and advantages”. They further reported that quantitative and qualitative method showed a year-wise increase, while number of mixed method research works decreased. Salar examined the research trends in the distance education in 15 journals in Turkey using the categorization method developed by Berge and Mrozowski (2001). Their key findings involve the predominance of descriptive studies compared to other modes of studies, more bias towards the topics on acceptance of pedagogical technologies, selection and utility of technologies in

distance education, design issues, active learning and strategies for improving interaction of students with technologies.

Davies et al (2010) assessed the research trends using content analysis in Master Theses submitted to universities in North America between 1998 and 2007. They found that studies were mostly on the research area of technology acceptance and adoption. The survey and case study approaches were frequently used compared to other methods; the least used method was the action research in distance education. Similarly, Duraket a (2017) determined the trends in distance education in 285 Master Theses submitted in Turkish universities between 1986 and 2015. They showed that most frequent areas of research studies included educational technology, followed by education and training and Computer Science and Control. Theoretical research was most common in Master level dissertations, while the action research was the least used method.

Horzum et al (2013) conducted as content analysis on 35 papers published in Turkish journals between 2005 and 2011, and reported that trend of the research was more oriented towards the assessment of utility of web-technologies in delivering the education was the most frequently found topic. Interview and document analysis were the most commonly applied data collection instruments. Bozkurt et al (2015b) performed content analysis on the 861 research articles published between 2009 and 2013 in different important journals involving Journal of Distance Education, The European Journal of Open, Distance and e-Learning, the American Journal of Distance Education, and Distance Education, Open Learning and the Journal of Online Learning and Technology and International Review of Research in Open and Distributed Learning. They reported that interviews, questionnaire and document were the most used data collection instruments, while the most applied research approach was the qualitative and mixed method was the least applied approach in solving the issues in distance education.

Bozkurt et al (2015a) identified the research trends in doctoral level dissertations submitted to the Turkish universities between 1986 and 2014 using the categorization method developed by Zawacki-Richter (2009). They showed that “Distance Teaching System and Institutions” at Macro Level, and “Instructional Design” at Micro Level were the most frequently researched themes. The “Costs and Benefits” and “Management and Organizations” at Meso Level were the least researched themes in dissertations.

The aforementioned literature showed that there are several studies conducted in the distance education in different countries for exploration of research trends in the open and distance education. However, there was a lack of evidence regarding the evidence of contribution of the Pakistani academic institutions in higher education towards the development and advances of the research in distance education. Most of the studies in exploring the research trends applied the Zawacki-Richter (2009) classification method which sets the parameters at macro, meso and micro level. This indicates that there is an urgent need to identify the research trends in distance education in Pakistani Higher Education in order to demonstrate the over-researched and under-researched areas, patterns in the use of research methods in the doctoral level dissertations submitted at AIOU. As the Zawacki-Richter (2009) classification method was successfully used by previous studies as shown in the literature, therefore, this study was use the classification method developed by Zawacki-Richter (2009) for exploring the research trends in dissertations submitted at AIOU between 2000 and 2014.

### **3. Research Methodology**

#### **3.1 Research Design**

The content analysis was employed on the doctoral dissertations in the field of distance education submitted to AIOU between 2000 and 2014. Berelson (1952) defined the content analysis as a method through which large chunks of the text are compressed into fewer categories using the explicitly described rules of coding. Content analysis is used for coding the verbal, written and visual communications and messages which may be qualitative or quantitative (Elo and Kyngas, 2008). The authors deemed the content analysis as the most appropriate method to address the research questions in this study.

### **3.2 Population**

Dissertations in the field of distance education at AIOU in Pakistan constituted the population of this study.

The search of relevant dissertations was conducted using the following key words: distance education, online education, distance learning, distance teaching.

### **3.3 Sample and Sampling Technique**

PhD dissertations distance education in Pakistani Higher Education formed the sample of this study. The criteria of inclusion and exclusion of dissertations were set by the authors, which are given below:

- The dissertations selected for this study must be of doctoral level research work.
- The dissertations should be submitted at AIOU between 2000 and 2014.
- The dissertations available in HEC research repository would be selected to be included in this study.
- The dissertations in the field of distance learning would be selected.
- The dissertations were accessed from the database of HEC.

Based on the above-mentioned criteria, the 32 doctoral dissertations submitted at AIOU between 2000 and 2014 and retrieved from HEC research repository comprised the sample of this study, which were selected using the random sampling technique.

The content analysis on the sample was applied, and contents of dissertations were scanned for certain variables. The descriptive statistics such as frequencies and percentages were used to summarize data.

### **3.4 Classification of Research Design, Models and Areas**

In this study, the classification system developed by Zawacki-Richter (2009) was followed to categorize the research trends in terms of research areas, research design and research models used in the doctoral level dissertations (Table 1). This system was chosen because of its wide applications in most of the studies aiming to explore the research trends in distance education. Furthermore, it will allow the comparison of the results obtained from this review study with other review studies in field of distance education.

Table 1

*Classification of Research Areas in Distance Education (Zawacki-Richter et al., 2009)*

<b>Macro level: Distance education systems and theories.</b>
<p><b>1. Access, equity, and ethics:</b> The democratization of access to DE 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 DE in developing areas. What is the impact of DE (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?</p> <p><b>2. Globalization of education and cross-cultural aspects:</b> Aspects that refer to the global external environment and drivers, the development of the global DE market, teaching and learning in mediated global environments, and the implications for professional development.</p> <p><b>3. Distance teaching systems and institutions:</b> DE delivery systems, the role of institutional partnerships in developing transnational programmes, and the impact of ICT on the convergence of conventional education and DE institutions (hybrid or mixed mode).</p> <p><b>4. Theories and models:</b> Theoretical frameworks for and foundations of DE, e.g., the theoretical basis of instructional models, knowledge construction, interaction between learners, or the impact of social constructivism learning theories on DE practice.</p> <p><b>5. Research methods in distance education and knowledge transfer:</b> Methodological considerations, the impact of DE research and writing on practice, and the role of professional associations in improving practice. Literature reviews and works on the history of DE are also subsumed within this area.</p>
<b>Meso level: Management, organization, and technology.</b>
<p><b>6. Management and organization:</b> Strategies, administration, and organizational infrastructures and frameworks for the development, implementation, and sustainable delivery of DE programmes. What is required for successful leadership in DE? DE 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).</p> <p><b>7. Costs and benefits:</b> Aspects that refer to financial management, costing, pricing, and business models in DE. Efficiency: What is the return on investment or impact of DE programmes? What is the impact of ICT on the costing models and the scalability of DE delivery? How can cost effective but meaningful learner support be provided?</p> <p><b>8. Educational technology:</b> New trends in educational technology for DE (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.</p> <p><b>9. Innovation and change:</b> 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).</p> <p><b>10. Professional development and faculty support:</b> 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?</p> <p><b>11. Learner support services:</b> 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).</p> <p><b>12. Quality assurance:</b> Issues that refer to accreditation and quality standards in DE. The impact of quality assurance and high quality learner support on enrolments and dropout/retention, as well as reputation and acceptance of DE as a valid form of educational provision.</p>
<b>Micro level: Teaching and learning in distance education.</b>
<p><b>13. Instructional design:</b> 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 DE.</p> <p><b>14. Interaction and communication in learning communities:</b> 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.</p> <p><b>15. Learner characteristics:</b> The aims and goals of adult learners, the socioeconomic Background of DE 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)?</p>

## 4. Data analysis and Discussion

### 4.1 Research Areas

The research areas were recorded from the dissertations, and were coded at three levels: micro, meso and macro levels based on the Zawacki-Richter's classification system (Zawacki-Richter, 2009) (Figure 3):

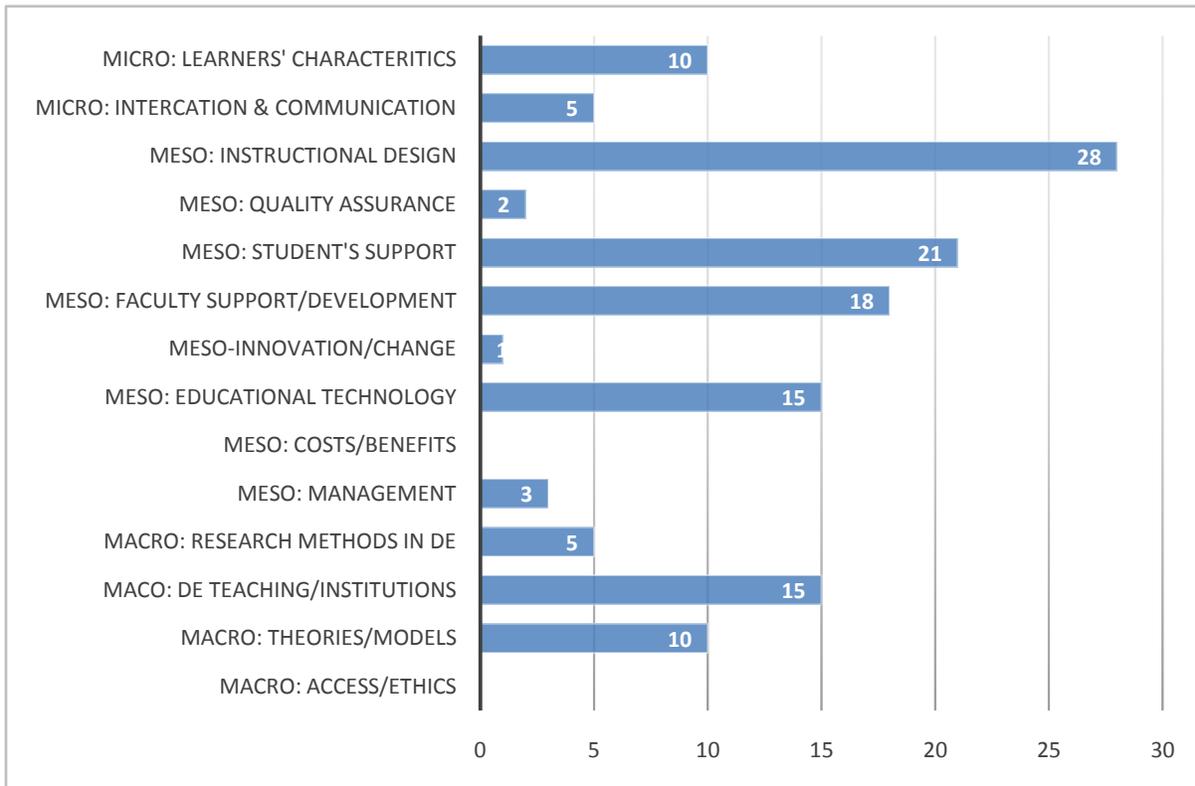


Figure 3: Research areas in doctoral dissertations at AIOU between 2000 and 2014. DE: Distance Education. \*One study may use more than one target.

As it can be observed in Figure 3, the instructional design at meso level, learners' characteristics at micro level and teaching systems at macro level were the most prominent research areas investigated in the dissertations in field of distance education. The second most researched area at meso level was the students support, followed by the faculty development/support, and the educational technology. Similarly, the second most studies research area at macro level was the development of theories and models in distance education in dissertations submitted to AIOU between 2000 and 2014. Dukar et al (2017) reported that meso-educational technology, micro-instructional design and macro-teaching systems in distance education were the most common research areas, which is consistent with the findings of this study. Similarly, Bozkurt et al (2015a) showed the similar results that micro-instructional design was the highly focussed research areas in the research works conducted in the distance education. In our study, it was clear that research activities are not balancedly distributed across all research areas at micro, meso and macro levels, which is supported by several other studies (Dukar et al., 2017; Bozkurt et al., 2015a, Bozkurt et al., 2015b, Zawacki-Richter et al., 2009).

## 4.2 Research Design

The research designs used in doctoral dissertations were examined; percentages of qualitative and quantitative and mixed methods are shown in Figure. We found that quantitative method was the most predominant one (81%), followed by qualitative method (13%) and mixed methods (6%) (Figure 1).

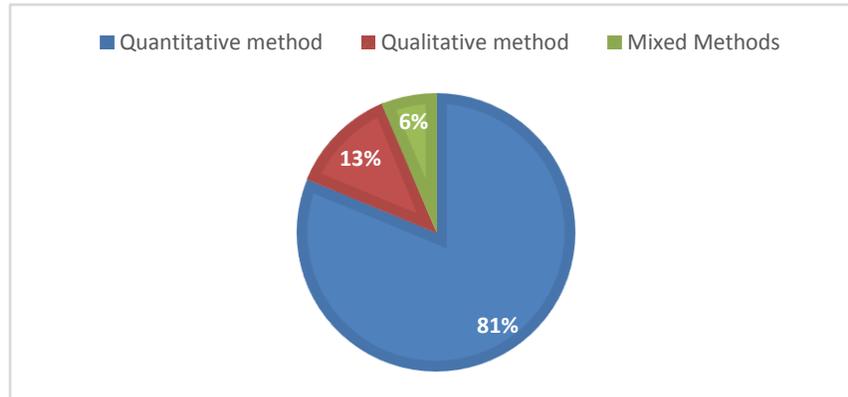


Figure 1: Research design

Thus, the quantitative method and mixed methods were the most and least used methods, respectively, which is parallel with findings reported by other review studies exploring the research works using content analysis (Zawacki et al., 2010; Kolbe and Brunker, 1997). However, there are many other studies which reported otherwise. They found that qualitative research design was the most used research design (Bozkurt et al., 2015b; Hauser, 2013; Lee et al., 2004).

## 4.3 Data Collection Tools

The table 2 presents the use of data collection tools based on their frequencies and percentages in the doctoral dissertations.

**Table No. 2** *Data collection tools, frequencies and percentages*

<b>Data collection tools</b>	<b>Frequency</b>	<b>Percentage</b>
Multiple Choice Questions	26	32.79
Questionnaire (Scale)	20	25.31
Interviews	12	15.18
Electronic documents	10	12.60
Focus group	5	6.32
Documents	3	3.79
Achievement Test	3	3.79
Total	84	100

\*One study may use more than one target

In the Table 2, the percentage of the multiple-choice questions (MCQs) [32.79%] was found to be highest in the dissertations submitted at AIOU between 2000-2014. The second and third highly used data collection tools included questionnaire (Likert-scale) [25.31%] and interviews (15.18%), respectively, followed by electronic documents (12.60%) and focus group (6.32%). The least used data collection tools were the documents (3.79%) and achievement test

(3.79%). Durak et al (2017) reported that questionnaire was the frequently used data collection tool, which is consistent with findings of this study. The finding that interviews is the second most used data collection tool in distance education research is corroborated by many studies (Drysdale et al., 2013).

#### 4.4 Sources of Data

The sources of data used in the doctoral dissertations were presented in Figure 2 based on their frequencies and percentages.

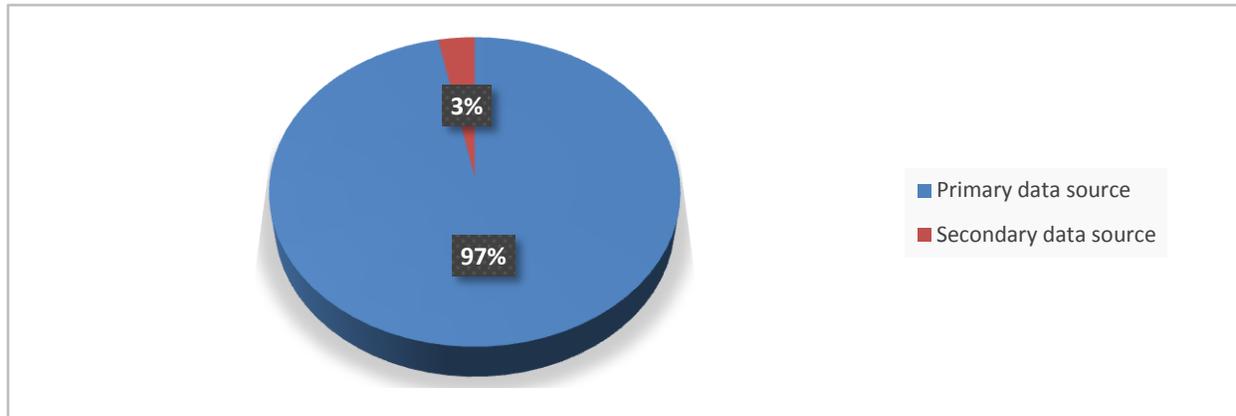


Figure 2: Proportions of application of primary and secondary data sources in PhD level dissertations.

In the figure 2, it can be observed that researchers at AIOU frequently used primary data source, while the secondary data source is the least used data source in PhD level dissertations submitted at AIOU between 2000-2014. Many studies have reported the results consistent with the outcomes of this study, showing that primary data source is the most predominant data source used in the distance education research (Gall et al., 2006; Nasr et al., 2013).

#### 4.5 Data Analysis Tools

Table 3 shows the frequency and percentages of the data analysis tools employed in PhD level dissertations in distance education submitted at AIOU between 2000 and 2014.

**Table No. 3**

QUANTITATIVE Statistical Tests					
Descriptive (62%)		Inferential (38%)			
Parametric (75%)		Non-parametric (25%)			
Central Tendency (Mean/Median/Mode)	18	t-test	25	Chi-Square	25
Relative Standing (Percentage/z-score)	30	Variance analysis (ANOVA/ANCOVA/MANOVA)	6	Mann Whitney U	4
Variability (Variance/Standard Deviation/Range)	9	Reliability Analysis (Cronbach's Alpha)	20	Wilcoxon Test	3

Descriptive Statistics (Non-specific)	2	Pearson Correlation	14	Kruskal Wallis	5
		Regression Analysis	7		
<b>QUALITATIVE</b>					
Content Analysis				8 (40%)	
Thematic Analysis				12 (60%)	
Total				20 (100%)	

\*One study may use more than one target

In the table 3, data showed that descriptive statistics and inferential statistics in the domain of quantitative statistical tests were used in 62% and 38%, respectively. In descriptive statistics, most of dissertations analyzed in this study showed preference for the use of percentage/z-score, followed by the central tendency statistics including mean/median/mode, and variability statistics involving variance, standard deviation and range. Furthermore, the dissertations applying the parametric tests frequently used the T-test, followed by reliability analysis, Pearson correlation, regression analysis and variance analysis. Shih et al (2008) reported the similar findings showing that T-test, Pearson correlation and reliability analysis were used more frequently in the research works in distance education compared to the other parametric tests. Some studies showed different results, for example, Wu et al (2012) and Goktas et al (2012) reported that Pearson correlation and regression analysis were most frequently used data analysis tools in research articles in distance education.

On examination of non-parametric tests in Table, it was found that Chi Square test was the most frequently applied data analysis technique, followed by Kruskal Wallis, Mann Whitney U and Wilcoxon test. Many other review studies produced the findings in consistent with the outcomes of this study for non-parametric tests (Davies et al., 2010; Drukar et al., 2017).

#### 4.6 Research Model

The research models used by researchers in PhD level dissertations at AIOU between 2001 and 2014 were examined; data are presented in Figure 4:

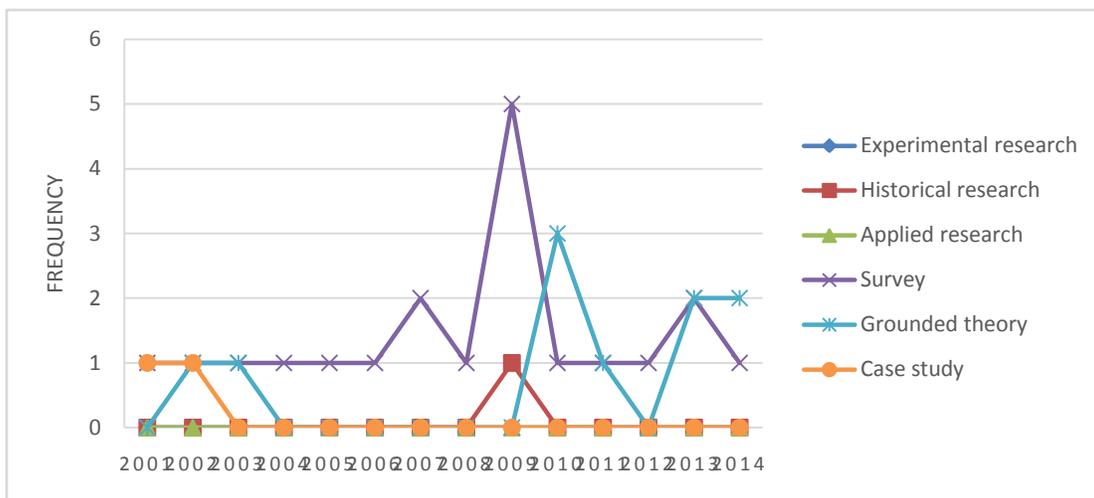


Figure 4: Distribution of research methods by years.

It can be observed in Figure 4 that most of the studies used the survey method, followed by grounded theory. The use of applied research, historical research and experimental research were used least. Thus, we report that number of studies using the survey (quantitative) was

highest (N = 20). In quantitative methods, grounded theory was the most used method (N = 10) followed by the case study method (N = 2). Trend of using the grounded theory was increased since 2009 and onward, showing that the emergence of the use of grounded theory in distance education dissertations.

These findings are supported by many other review studies in distance education (Bozkurt et al., 2015; Randall et al., 2010) who reported that survey was the most widely applied method in the research articles in distance education. Several studies showed that grounded theory was the predominant method in qualitative research, which is in parallel with the findings reported by this study. This study found that experimental research is not found in dissertations at AIOU, which is in contrast with the other studies which showed that second most used method after survey method (Durak et al., 2017; Lee et al., 2004, Davies et al., 2010). This shows that experimental research needs to be promoted in dissertations at AIOU.

#### 4.7 Participants

The natures of participants selected in dissertations are detailed in the Table No. 4.

Nature of participants	Frequency	Percentage
Teachers	15	26.31578947
Graduate students	12	21.05263158
Undergraduate students	10	17.54385965
Specialists	7	12.28070175
Master students	5	8.771929825
Program	4	7.01754386
Academic institutions	3	5.263157895
Other (technicians, documents)	1	1.754385965
<b>Total</b>	<b>57</b>	<b>100</b>

\*One study may use more than one target

It can be observed in table 4 that most of the studies selected the teachers as the participants of the study (21%), followed by graduate students (21%), undergraduate students (17%), and specialists (12%). The least selected participants are academic programs and academic institutions (5%). This study ranked teachers, graduate students and undergraduate students in the first, second and third position, which is in correspondence with the results reported by many other studies (Bozkurt et al., 2015a; Bozkurt et al., 2015b). However, some studies reported undergraduate students as the most widely selected participants (Durak et al., 2017) which stands in contrast with results reported by this study, because teachers in Pakistan are selected with higher proportion as participants in this study. This reflects that researchers show the preference for selection of participants based in the ease and availability of participants. This variation may be due to focus on the development teaching in distance education in AIOU for delivery and management of distance education.

#### 4.8 Research Interests/Variables

Table 5 shows the frequency and percentage of doctoral dissertations based on the research interests/variables (dependent variables).

<b>Research interest/variables</b>	<b>Frequency</b>	<b>Percentage</b>
Teachers effectiveness	23	27.71
Teachers development	21	25.30
Students' performance	17	20.48
Delivery methods	10	12.05
Satisfaction	7	8.43
Motivation	5	6.02
Total	83	100

\*One study may use more than one target

According to data presented in Table 5 demonstrated that teachers' effectiveness was the most frequently used variable (27.71%), followed by teachers' development (25.30%) and students' performance (20.48%)., delivery methods (pedagogical practices) [12.05%]. Motivation and satisfaction of students were the least used variables, 6% and 8%, respectively, in doctoral dissertations. Thus, this study reported that teacher's effectiveness and development were the most commonly used methods, which is consistent with the previous studies (Horzum et al., 2013; Bozkurt et al., 2015).

## **5. Conclusion**

This study has explored the research trends with respect to certain variables in doctoral dissertations submitted at AIOU between 2001 and 2014 in the field of distance education. The key findings showed that quantitative research design was the most popular method, followed by qualitative one. The mixed methods research design was the least used in dissertations. Reporting the research trends of data collection methods, we found that MCQs and Likert-scale based questionnaire were the most used instruments, followed by interviews. The achievement test and documents (paper-based) were the least used data collection instruments. In addition, we demonstrated that most of dissertations used the primary sources of data compared to the secondary data source. The dissertations reviewed in this study exhibited descriptive statistics was the highly preferred method of data analysis in which most of studies applied percentage/z-score tools to analyze the data, followed by mean/median/mode. The second most used quantitative method was the inferential statistics in which researchers showed preference for the T-test, followed by reliability analysis and Pearson correlation. Under non-parametric category, Chi-square was the most applied statistical tool to analyze data. In qualitative category, thematic analysis was widely used data analysis tool compared to content analysis. The examination of research areas was conducted at micro, meso and macro levels. We found that mico-learners' characteristics, meso-instructional design, meso-students support, macro-distance education teaching systems and macro-theories/models were the most studied research areas. Most of participants included in the PhD level research dissertations were the teachers, followed by graduate and undergraduate students. The most investigated variables were the teachers' effectiveness, teachers' development and students' perceptions.

## **6. Recommendations**

In the light of findings and conclusions of this study, the following recommendations can be given for the future research:

1. Researchers should focus on the micro and macro level research areas which are under-researched areas in field of distance education. This will lead to even distribution of research activities across all three major levels: micro, meso and macro levels.
2. The outcomes of our study showed be utilized by the researchers to develop deep understanding of the most and least used research designs, data collection instruments, and data analysis tools.
3. The supervisors at AIOU should help their students to direct their potential to explore more practical avenues in distance education compared to the theoretical grounds. This will help the practitioners and policy-makers to develop more comprehensive strategies for development and promotion of distance education.
4. Our analysis showed that currently most of the studies include teachers and graduate students as participants in their dissertations. A wider variety of participants should be encouraged to be included to foster the diversity in the development of various aspects of distance education.
5. We found that quantitative research design was the most used research design. The supervisors of doctoral dissertations and students should foster the practice of mixed method research design which helps generate more precise and reliable findings by overcoming the weaknesses associated with qualitative or quantities research design.

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