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Examining the Knowledge Produced in Educational Administration Doctoral Theses with Respect to Functions of Science

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Abstract

This study examines the contribution of the knowledge produced in educational administration doctoral theses to the functions of science, concept and model development, theory formation, scale development/adaptation and application. Content analysis, one of the qualitative methods, was used in conducting the research, which analyzed 122 doctoral theses dated between 2017 and 2020. These compositions were produced at 27 universities that ranked in the top 500 globally in CWUR (Center for World University Ranking) 2020. The results showed that the knowledge produced in the theses was mostly descriptive. However, there were a few experimental theses that reached the control level and contributed to the application with a concept, model, theory creation and scale development/adaptation. The findings offer implications that can guide future research in the field of educational administration.

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Introduction

This study contributes to the assessment and evaluation upon the scientific quality of knowledge produced in the field of educational administration and acts as a guide to increasing this quality. Findings its roots in the beginning of the 20th century, the field of educational administration has been the subject of much debate as its identity and newly-constructed knowledge base have been frequent targets of criticism (English, 2003; Evers & Lakomski, 2012; Greenfield, 1973; Oplatka, 2008). From time to time, issues such as the methods used, the accuracy of the produced knowledge, the contribution of the philosophical approach to the field (Willower, 1985, p. 5), the polarization of paradigms, and the uncertainty of the boundaries of the field (Oplatka, 2008, p. 4) have been discussed. According to Donmoyer (2020, p. 344), none of these issues have been solved and so they continue to create challenges well into the 21st century. The infrequent reviews of the knowledge of the field on national and international scales (Ahmed, 2020; Archbald, 2008; Berkovich & Eyal, 2017; Castillo & Hallinger, 2018; Hallinger & Chen, 2015; Hammad, Samier & Mohammed, 2020; Hallinger & Kovacevic, 2021; Heck & Hallinger, 2005; Gümüş, Bellibaş, Esen & Gümüş, 2018; Gümüş, Bellibas, Gümüş & Hallinger, 2020) were done. Philosophical and epistemological studies (Donmoyer, 2020; Evers & Lakomski, 2012; Fitz, 1999; Haller, 1979; Oplatka, 2008; Oplatka, 2016) have also tried to

suggest solutions to the field problems regarding the produced knowledge. Noting that the most important element in the scientization of a field of study is the scientific quality of the produced knowledge (Yılmaz, 2018), it can be said that the aforementioned studies are important and should be multiplied for varying contexts.

When we look at the Turkish context of the knowledge production in the field, it is seen that various problems are evident, and yet ignored on an epistemological, ontological and methodological level (Turan, Bektaş, Yalçın & Armağan., 2016, p. 100). Failing to put theory into practice (Beycioğlu & Dönmez, 2006; Kısa, 2016), designing studies that are solely descriptive, lacking creativity and not contributing to the practice (Balcı, 2008; Demirhan, 2015; Yılmaz, 2018) are just some of these difficulties. Unless this is corrected, knowledge generated in the field will be unable to provide effective solutions to the problems in educational applications (Özdemir, 2017). There are studies (Balcı, 1991, 2008; Beycioğlu & Dönmez, 2006; Çelik, 1997; Demirhan, 2015; Takmak 2019; Turan, 2004; Turan & Şişman, 2013; Örücü & Şimşek, 2011) that evaluate the knowledge produced in the field in terms of theory and in the context of the field of science. There are also studies (Aydın & Uysal, 2011; Karadağ, 2009; Polat, 2010; Turan, Karadağ, Bektaş, & Yalçın, 2014) that examine theses and books produced in the field. However, only a few studies (Ayyıldız, 2019; Özdemir, 2017; Şahin, 2018) are focused on the epistemological evaluation of the knowledge of field.

The literature review focusing on philosophical and epistemological studies revealed that there is no research that deals with the knowledge of the field regarding the functions of science. This study can determine the extent to which knowledge production in the field fulfills the functions of science (situation and explaining,

predicting, controlling functions), namely, identifying the strengths and weaknesses in putting the knowledge produced into practice. Thus, it can reveal the main points to be considered in order to increase the scientific quality of the knowledge. In addition, the research findings can provide guidance to supervisors and students in determining doctoral thesis topics, as well as in clarifying the type of knowledge to be acquired from the theses. The results of this study can also help policymakers determine and regulate the science policies of countries. At the same time, it can lead institutions to improve the processes behind thesis creation. By associating doctoral theses with the problems in the real life, the knowledge production targeting those problems can be encouraged. For example, what school principals have experienced in the current pandemic crisis, such as the effects of the refugee crisis on internationalization in higher education.

As in all fields of science, knowledge production in educational administration is realized through the stages of description, prediction, and control (Özdemir, 2018). Producing qualified knowledge in a field plays a key role in the development of policies, solving problems in practice, and scientificizing the field. For this reason, in determining the theses' topics and the research design, the efforts should target the control stage in addition to description and prediction. Although difficult in social sciences, research designs in theses should fulfill the functions of prediction and control. The theses that ignore the factors affecting phenomena and lack research designs to control the situation applying the required measures may not provide an adequate contribution to the educational administration. In order to find solutions to the real problems of the practitioners of the field, it is necessary to produce results for the application that reach the level of control. Özdemir (2017) states that some of the reasons

why this does not happen are the fact that the field of educational administration is still trying to build its own unique identity and the weakness of the theory-practice link, which is seen as an obvious problem in the field. According to the researcher, philosophical studies aimed at determining the epistemological, ontological and methodological boundaries of the field are limited. In addition, the production of research within the framework of academic career and the consideration of individual benefit rather than social benefit prevents the establishment of theory-practice bond. This results in the inadequacy of the contribution of the knowledge produced in the field to real society and ensures ongoing education problems. Similarly, Coburn and Stein (2010) state that researchers primarily focus on problems arising from their own interests, rather than the needs of practitioners who already have limited access to research findings produced in the field. Swafford (1990, p. 11) added that only 7% of research in the field of educational administration is related directly to itself, namely its philosophical context. Turan and Şişman (2013) argue that while determining the research topics, it is necessary to focus on the ontological problems related to the essence of educational administration, to go from practice to theory and to develop field-specific theories when necessary.

Importance and purpose of the research

In this research, the produced knowledge via doctorate theses in educational administration was examined in terms of its contribution to the functions of science, concept and model development, theory formation, scale development/adaptation, and practice. This research is also directly related to the field of educational administration. This also investigation is important since it provides

recommendations for future studies in addition to focusing solely on educational administration.

Answers were sought to the following problems to fulfill the purpose of this study.

1. What is the frequency distribution of the theses with respect to methods?

2. What is the frequency distribution of the theses with respect to describing the situation and the explaining, predicting and controlling functions of science?

3. What is the frequency distribution of the theses with respect to their contribution to concept and model development, theory formation, scale development/adaptation, and practice?

Conceptual Framework

Reviewing the Knowledge of the Field and Doctoral Theses

The nature of the produced knowledge in a field of science can give important clues about its developmental level. Oplatka (2008) explains that a review of the produced knowledge will reveal the trends in the development of knowledge production in educational administration. Heck & Hallinger (2005) assert that examining the knowledge of the field is useful in understanding the practical problems and evaluating research methods. Such reviews and examinations may contribute to the very process by making the field a more respected discipline in the future (Hallinger, 2014). Along with providing information regarding the scientific quality of the knowledge produced, a systematic and holistic examination of the

studies conducted in different countries can also provide the solution to management and control problems in educational organizations.

The production of knowledge through doctoral theses is significant, as the doctorate degree is still considered highly prestigious in academia (Ödemiş Keleş & Tonbul, 2020, p. 668). Doctoral theses, which are among the most original studies, differ from master's theses with respect to information synthesis and to their contribution to the field (Neuman, 2014). Through these theses, faculty members and doctoral candidates in the field of Educational Administration are able to comprehend the logic of scientific education and advancement of knowledge (Fairweather, 1996), and practice the management of leadership skills (Archbald, 2008) Aside from making original contributions to knowledge (Trafford, Leshem, & Bitzer, 2014), doctoral theses should also fulfill some of the functions of science during the research process.

Research, including doctoral theses in all fields of science, is often used to describe a thing or an event, explore the relationship between phenomena or predict the future (Marczyk, DeMatteo & Festinger, 2010). In this context, it is thought that examining doctoral theses is a very effective way to reveal the scientific quality, weaknesses, and strengths of the knowledge produced in a field of science, and how well it corresponds to the real world.

Functions of Science

Objectivism in the knowledge production process explained the role of social science while interpreting social reality by revealing the universal laws of society and human relations in it (Balcı, 2021). Kerlinger (1973) describes the two approaches to science: static and dynamic. These approaches determine the functions of science.

According to these two opposing views, in addition to the classical understanding, explanation, prediction and control functions of science, functions in the context of the dynamics of social sciences such as the educational function of dissemination-publishing, the function of application to human use, the function of technology, tools and methods are also mentioned (Balcı, 2021). There are two perspectives on educational science as an aspect of social sciences. The traditional view regards it as natural science and emphasizes natural science research in producing science. The radical view, on the other hand, maintains the traditional understanding of social science in describing human behavior, but emphasizes the difference between human beings and natural phenomena. Within the scope of objectivism, the nature of social sciences has been to "reveal the universal laws of society and human relations in it". From the point of view of subjectivism, the nature of social sciences and the knowledge produced in this context have led to the question: "How do different people interpret the world they live in?" (Balcı, 2021, p. 3-6).

Scientific knowledge production in educational administration also goes through the stages of description, explanation, prediction and controlling (Özdemir, 2018). These stages also constitute the functions of science. Describing the situation is the recognition of the investigated events or things, the elaboration of their characteristics and the determination of the relations between them, that is, the description of existing situations (Balcı, 2021). The explanation is meant to reach common generalizations, and to form principles and theories by finding the causes, effects and levels of the interrelationship of events in nature (Erkuş, 2020). The most advanced explanation and the ultimate goal of science is coming up with a theory (Karasar, 2007; Balcı, 2021). Another purpose of the research is to

predict. If the researcher finds a relationship (i.e., correlation) between two variables based on previous descriptive research, it may be possible to predict one variable based on knowledge of the other variable (Marczyk, De Matteo & Festinger, 2010). In other words, the goal of prediction is to determine the empirical relationship of the analyzed events with other events and to look at a situation in order to predict what may happen in the future. Knowledge obtained through scientific research can be used to understand and explain other events and phenomena because its basis should be practical. The accumulative and progressive feature of science depends on its ability to predict (Erkuş, 2020). In essence, if the purpose of a test within the scope of the research is to make predictions about some future behavior or situation, this means that the test collects evidence to determine its validity (Kelecioğlu & Geçer Şahin, 2014). Predictive validity is defined as the ability to predict the future of the measurement result of the situation in question (Kline, 2000). The control function of science is aimed at controlling the events of nature and society in the process of scientific research (Karasar, 2007). Once a situation or event is understood, it may be possible to find out how it can be controlled, after determining the cause-effect relationships and the components of the situation (Walliman, 2010). For the control function to be effective, the status detection and explanation functions must work well (Karasar, 2007). Exploring the reasons why it rains leads to detection of the situation and explanation, in which situations it will rain leads to prediction, and whether it 'can be rained' at the desired time and amount leads to the control function. Causes of job dissatisfaction, possible consequences and practices that increase or even secure job satisfaction can be given as examples from the field of educational administration. It should be noted that the control function mentioned here differs from exact measurements in the natural

sciences (for example, water boils at 100 degrees Celsius in certain conditions) and should be evaluated within the framework of social sciences. Again, for the purpose of connecting with social sciences, even if experimental research reveals which factors are effective in controlling job satisfaction, it should be taken into account that not all variables affecting job satisfaction can be kept under control as in the laboratory environment.

Method

Research Design

A qualitative interpretive approach was used in the research. In qualitative research, reality is interpreted in the context of the researcher's knowledge and experience. Qualitative research is based on an anti-positivist interpretative perspective. This takes into account that there are many different perspectives in the world, so the facts are structured by social environment. In qualitative research, situations and events are handled from the perspective of individuals and there is usually no need for generalization. There is no doubt that generalization can be mentioned if there is an effort to produce a model to reveal the patterns among the variables.

The content analysis method, which is frequently used in qualitative research, was used in this study. Content analysis is "a systematic, repeatable technique in which some words of a text are summarized with smaller content categories with coding based on certain rules" (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2019, p. 259). Content analysis studies are divided into three parts: meta-analysis, meta-synthesis (thematic content analysis) and descriptive content analysis. In descriptive content analysis, research on a subject is evaluated and defined according to their tendencies.

Since the goal is to examine the knowledge produced through doctoral theses in education administration according to certain criteria, descriptive content analysis is the most suitable approach (Çalık & Sözbilir, 2014; Suri Clarke, 2009).

Study Materials

The research material consists of 122 doctoral theses completed in the field of educational administration between 2017-2020. Each originated in one of 27 universities that were among the top 500 in the CWUR (Center for World University Ranking) world university rankings in 2020. Because the research problem required having a sample with certain attributes, the criterion sampling was used (Büyüköztürk et al., 2019). We selected the theses from eight countries: USA, Canada, England, Japan, China (Hong Kong), South Korea, Netherlands, and Sweden. Five criteria were effective in the selection of countries: (1) The country's location in the selected regions (Far Asia, Northern Europe), (2) the presence of universities in the Top 500 in the CWUR 2020 ranking, (3) the presence of education management in these universities, (4) the theses produced in the field of educational administration should be open to access, and (5) they should be written in English. Doctoral theses were obtained from "oatd.org, ebsco.hot, and dissertations.se" as well national open access resources such as "hub.hku and narcis.nl". Sweden and the Netherlands represented the countries of northern Europe, while Japan, China, and South Korea were selected to embody east Asia. The above-mentioned criteria factored into the number of countries and universities that were included in the study.

Since the field of educational administration was developed in the USA and Canada, the number of theses completed between 2017

and 2020 was relatively higher in these countries than in others. For this reason, we made a systematic sampling within the theses from North American institutions. According to the systematic sampling method, the population size is divided by the desired sample size, and a sample selection is made with a gap width as large as the obtained coefficient (Büyüköztürk et al., 2019). Approximately 25 theses from other regions were sampled. For this reason, we decided to set the interval width to three to sample 25 theses out of 75 and 77 theses, which were completed in three universities from the USA and Canada, respectively. In this order, the theses corresponding to three and multiples of three were selected and 25 theses chosen were added to the study material. Information regarding the included doctoral theses is given in Table 1.

Table 1.

Distribution of study materials

Content	*Country*	*University*	*Number of theses*		*World Ranking*
North America	United States	University of Harvard	12	25	1
		The Ohio State University	7		58
		University of California	6		18
	Canada	University of Calgary	13	25	188
		University of Toronto	9		24
		University of British Columbia	3		48
Europe	Great Britain	University of Cambridge	11	24	4
		University of Leicester	9		228
		University of Glasgow	2		120
		University of Edinburgh	2		20
Far Asia	Japan	Waseda University	4	14	176
		Hiroshima University	3		413
		Kobe University	2		444
		Kyoto University	2		28
		Tohoku University	1		132
		Keio University	1		93
		Osaka University	1		87
	Special Administrative Region of Hong Kong (China)	University of Hong Kong	6	6	166

	South Kore	Seoul National University	3	3	31
North Europe	Netherlands	Utrecht University	10	20	68
		Maastricht University	3		240
		Erasmus University	3		92
		Wageningen University	2		187
		Delft University	1		259
		Vrije University Amsterdam	1		146
	Sweden	Upsala University	2	5	88
		Stockholm University	3		159
		TOTAL			*122*

Data Collection Tools and Data Analysis

We accessed the theses from international open-access sites such as "oatd.org, Ebsco.hot, dissertations.se" and national thesis archives of the determined countries such as "hub. hku, narcis.nl". We downloaded them as PDF files. The data were analyzed by the document analysis technique through developing the criteria list in the Evaluation Criteria and Indicators of Knowledge Production in Theses created by Ödemiş Keleş & Tonbul (2020). Document review is defined as the analysis of written and visual materials containing information about the phenomena and events that are requested to be researched (Yıldırım & Şimşek, 2016, p. 189). The fulfillment of the functions of science, concept, model development, theory building, scale development/adaptation, and contribution to the practice of theses was examined according to the indicators in the criteria list in Appendix 1.

There is a consensus in the literature, although there are different views in social sciences on the status determination, explanation, prediction and control functions of science (Balcı, 2021; Karasar, 2007; Özdemir; 2018). The presence of correlation and

regression analyses was taken as a criterion for the theses to be included under the category of "making predictions", which is one of the functions of science. In addition, expressions that describe how a situation in the past explains the present and how an existing situation will affect the future were also taken as criteria (e.g., the effects of an increase in the number of students in employment and schooling). This is because the predictive relationship between two variables can be measured by correlation and regression analyses (Büyüköztürk, 2020, p. 94). Considering the different meanings attributed to the control function between social and natural sciences, theses had to include applications such as experiment or action research in order to meet the criteria. the rationale here is that the control function can only be realized after putting the knowledge obtained from previous functions of science into practice (Balcı, 2021).

For the category of contribution to theory development, coming up with a new theory by considering an old one a problem situation and processing it directly, or developing a new theory by testing an existing one and making use of previous theories were taken as indicators. For the category of contributing to the application, developing a new technique such as software and programs, and depicting a new perspective and way of doing things were used. Theses which offer a new model and theory and containing experiments have also been put into this category considering they present a new perspective and way of operating.

Validity and Reliability

To ensure the validity of the research, the researchers constantly exchanged views during the data analysis process. Theses were categorized according to the criteria list given in Appendix 1, which is explained in detail in the data analysis section. Opinions were

received from three different faculty members during the creation of the criteria list. The data were subjected to expert evaluation by a third professional, and control coding was completed. With the control coding made within the scope of expert evaluation, the differences in coding can be discussed and the data becomes more reliable and understandable (Miles & Huberman, 2015). It was calculated with the formula of Miles and Huberman (2015) (Reliability=Agreement/ [Agreement + Disagreement] x 100) as a result of expert evaluation. According to Miles and Huberman (2015), 80% agreement between encoders is sufficient for reliability, and it was found to be 90% in this study. A consensus was reached between the researcher and the expert in classifying the theses according to the criteria.

Expressions or quotations from the theses were used to meet the validity (credibility) and reliability (consistency). In the study, a detailed explanation was given to support the external validity of the data collection and analysis process. Theses from many countries were randomly selected according to certain criteria, and the criteria were varied in the checklist. Although the theses are in a certain discipline, attempts were made to achieve maximum diversity by including country and university criteria. In addition, the difference in the scope of the studies also contributed to the maximum diversity.

Limitations

This research includes a limited number of studies that are selected from a larger group of theses in educational administration based on criteria, such as country of origin and the date of the publication. This study focused specifically on the contribution of the theses to meeting the functions of science, the methods used, concept and model development, theory building, scale development/adaptation, and applications. Due to the fact that the theses are randomly selected, the differences between the nature of the

theses in the early and late period may be seen as a limitation. These limitations can be overcome if all doctoral theses are accessible and in English.

Results

Distribution of Theses According to Their Methods

The method sections of the theses were examined to gain knowledge about the distribution of the research design, data collection technique, and sampling type. Among the 122 theses examined, most of the studies (n=71) used a qualitative design. This is followed by theses with mixed (n=33) and quantitative designs (n=18). Most of the thesis with the qualitative design used case study (n=47), and a limited number of ethnographic (n=4), narrative (n=4), embedded theory (n=2), feminist (n=1) and historical approaches (n=1) were observed. The theses with mixed research design mostly employed descriptive sequential (n=15) and multi-stage mixed (n=9) patterns. However, the embedded (n=2) and nested mixed patterns (n=1) were less preferred. In the quantitative theses, survey design (n=9) was used most of the time, while the causal screening (n=1) and the descriptive comparative educational research pattern (n=1) were less frequently used. It is seen that experimental designs (n=7) are also used in theses, although not at a high rate. It has been determined that experimental patterns that can be used to generate knowledge for the control function of science were not sufficiently utilized.

The interview technique was used in most of the qualitative theses (n=22). In addition, theses jointly using "observation, interview and document analysis" (n=17) and "document analysis and interview" (n=14) were noted. Questionnaire and interview techniques were mostly used together in mixed-approach theses (n=9). Questionnaire (n=5) and experimental technique (n=5) were the most used techniques in quantitative theses. In addition, the number of theses (n=20) that used three or more data collection techniques (e.g., scale, observation, interview, and survey) together was remarkable.

The variety of data collection techniques in theses with mixed design stands out as a striking finding. We evaluated this situation as an effort by researchers to create diversity in data collection to strengthen validity and reliability.

Theses with samples including teachers (n=46), students (n=45) and education administrators (n=39) were abundant. However, theses focusing on parents (n=7), inspectors (n=4), foreign students (n=2), dropouts (n=1) and teacher candidates (n=1) were relatively rare. The number of theses covering stakeholders such as educational personnel (n=16) and teaching staff (n=11) was comparably low. It can be said that a focus on the neglected stakeholders through the educational administration studies is important in increasing the contribution of the research to practice and the number of beneficiaries.

Distribution of Theses According to the State of Fulfilling the Functions of Science

The findings obtained in line with the second sub-purpose of the study are shown in Table 2.

Table 2.

Distribution of theses according to the state of fulfilling the functions of science

Function of Science	n
Describing the situation and explaining	122
Predicting	31
Controlling[1]	15

[1] In order to classify the theses examined as suitable for control, it was taken as a criterion that they were tested using applied methods for control, such as experiment or action research.

An examination of Table 2 reveals that all the theses (n=122) fulfill the compulsory first step of the functions of science, describing the situation and explaining the causes. This was followed by theses making a prediction (n=31), and employing controlling (n=15). The determination of the relative scarcity of predicting and controlling functions in theses was an important finding. The following is the excerpt from a thesis pointing out one of the functions of science, namely describing the situation and explaining the reasons:

> *"This study found that an integral aspect of a principal's longevity lies in the trusting relationship he/she has with his/her direct supervisor, oftentimes a pastor." (Thesis 1)*

To include the knowledge produced in theses in the category of prediction, the use of a correlational design along with an explanation of how a situation in the past affects the present have been taken as criteria. The following is the excerpt which embodies predicting:

> *"A statistically significant correlation was found between the two constructs indicating a strong positive linear relationship between the academic and career self-efficacy measures (Pearson coefficient: .657 p value = 0.001)." (Thesis 11)*

An excerpt from the statements that meet the predictive function of social science by pointing how a current situation will take shape in the future is given below:

> *"This suggestion should be considered because, if these students intend to settle down in the country where they attended PSEIs and are culturally orientated, they could be able to assess a suitable place for themselves (Enders, 2004). This would expand the nation's economic growth when these students settle and invest in some of these lesser populated areas or provinces." (Thesis 29)*

Here is an excerpt that categorizes the controlling function of the science.

> *"Students who completed both the pre-departure CQI and the post-return CQI instrument and gave their permission to utilize their data, were included in the sample of 90 respondents. All students in the sample participated in a study abroad program that changed from seven to ten days in length with other degree seeking students enrolled at The Ohio State University. Each program was led by at least two OSU faculty or staff members who taught students in at least six seminar style class meetings prior to departure. Students also participated in a required university on-line health and safety orientation that briefly addressed cultural adaptation." (Thesis 13)*

It was found that the knowledge produced in the theses was mostly in the stages of describing the situation and explaining the reasons. The fact that there was relatively little knowledge in predicting and controlling categories is a remarkable finding.

Distribution of Theses According to Their Contribution to the Concept and Model Development, Theory Formation, Scale Development-Adaptation and Practice

A total of 122 theses examined were distributed with respect to *developing concepts* (n=2), *developing a model* (n=4), *developing a new theory* (n=2), *developing a new theory by utilizing previous theories* (n=1), *developing scales* (n=1), *adapting scales* (n=2) and *providing a new perspective and way of doing things* (n=17). It is observed that most of the thesis contributed to a new perspective and way of doing things. Considering a theory as a problem status, the type of contributions could not be found. There is also no contribution to theory verification and technology development.

The following are quotations regarding the contribution of the knowledge produced in the theses to the development of a concept or model, theory formation, scale adaptation, and a new perspective and way of doing things.

> *"In my first paper, I develop the concept of technical ceremonies to describe a new coupling pattern in schools, where instead of ceremonially complying with formal policies and structures while buffering technical activities, educators ceremonially change surface-level aspects of their practice while buffering deeper aspects of their practice (beliefs, assumptions, patterns of interaction, pedagogy) from influence." (Concept development/Thesis 25)*

> *"My thesis presents a model of professional development that supports these transformational changes… A particular model of professional development developed and emerged from my analysis of the intervention (Chapter 8)." (Model development/ Thesis 58)*

> *"Whereas induction focuses on theory generation, abduction focuses on theory development. In the last step of my research in this dissertation I abductively use earlier research, theory, and my findings to develop a concept and theory." (Developing a new theory using previous theories/Thesis 110)*

> *"In Study One, 582 students from Primary 4 to Form 3 completed the Chinese version of the S-CASSS. The validity of the scale was established through exploratory and confirmatory factor analyses." (Scale adaptation/Thesis 116)*

> *"Chapter 5 presents Study Two, which constructs a model of school satisfaction for Chinese students in Hong Kong by testing the direct and indirect effects of social support from teachers, parents, and classmates on self-efficacy, hope, and school satisfaction." (Contribution to a new perspective and way of doing business/Thesis 116)*

The findings show that the contribution of these theses produced in the field to the concept, model, theory, scale development and adaptation and practice is quite low. This was a surprising finding. The next section attempts to clarify this and other discoveries from the process.

Discussion

The research tried to answer the question of how the theses produced in the field of educational administration are distributed according to their method, according to the functions of science, concept, model, theory formation, and scale development/adaptation and contribution to practice.

Research findings show that the knowledge produced in the field is mostly done in qualitative and mixed research designs. Generally, a case study was used in the qualitative designs and explanatory sequential and multi-stage mixed designs were used in mixed models. Similar to this finding, a number of studies in the literature have concluded that the qualitative method is the dominant type in field studies, an observation consistent with our findings (Berkovich & Eyal, 2017; Gümüş et al., 2018). However, Hallinger & Chen (2015), who reviewed the knowledge produced in the field with an Asian focus between 1995 and 2012, determined that although qualitative research methods were more popular before 2006, the use of quantitative research methods increased significantly between 2006-2012. The reason for this difference in findings may be due to the time zone difference of the studies included in the sample. The increase in qualitative patterns can be explained by the significant progress in the acceptance of selected qualitative methods in the last two decades, and the widespread, if not unanimous, acceptance of patterns such as case

studies, ethnography, and naturalistic research in academia (Heck & Hallinger, 2005). Such an interest in the use of qualitative and mixed approaches demonstrates that the field of educational administration has begun experiencing a greater impact from the qualitative research approach in recent years. Aypay et al. (2010) reached similar findings. Therefore, collecting quantitative and qualitative data together, or sequentially, in order to make sense of the findings revealed by numbers in social sciences (for example, the interaction of subjects such as job satisfaction, leadership, etc. with culture, belief, ideology, etc.) will further strengthen the research. We suggest that quantitative methods which have a great contribution to the field, originate from positivism, have strong validity and reliability, and qualitative methods that provide in-depth knowledge be used together to complement each other's weaknesses. Creswell and Plano Clark (2020) note that mixed methods research provides the power to compensate for the weaknesses of both qualitative and quantitative research, encourages the use of multiple worldviews, and answers questions that quantitative and qualitative research alone cannot answer.

In the study, we found that interviews and more than one data collection technique were used extensively in qualitative research. Questionnaire and interview techniques were mostly used in theses with mixed designs. In addition, we have seen that three or more techniques are frequently used together in mixed studies. In quantitative theses, the most preferred design by the researchers was survey. Berkovich & Eyal (2017) determined in their research that the interview technique was the mostly used technique in qualitative research, and that studies that use more than one qualitative data collection technique were twice as common as those that use a single technique. The reason for the frequent use of three or more data collection techniques in qualitative and mixed approach theses may be

to overcome the generalization problem of the qualitative method by providing data diversity, as well as the desire to strengthen the validity and reliability of the research, also known as triangulation in research (Creswell, 2017).

We found that teachers, students, and educational administrators were the focus of most of the thesis's samples. However, theses sampling parents, inspectors, foreign students, and teacher candidates were few, and those including education personnel and teaching staff were very rare. Similar to this finding, there are studies in the literature that indicate that vocational high schools and educational personnel are rarely included in the samples (Ödemiş Keleş & Tonbul, 2020) and that the focus is mostly on school principals and teachers (Gümüş et al., 2018). In terms of different theories, this may be discussed further in the future. For example, in the course of the Chaos Theory, the courses or the student-receiving system, such as the consultancy system, be taken to support the scientific nature of the theses. Again, Stakeholder and Actor-Network Theories argue that the solutions produced without accounting for those that are affected and those that cause the problems will not be functional. From this point of view, it can be said that even the stakeholders who are thought to be the 'most ineffective' should be included in a study as factors determining the variables and making up the samples due to the butterfly effect assumption. On the other hand, the organizational ecology theory suggests that the differentiation of structural or human resources in organizations is not the only distinctive, but also possible future styling factors that appear insignificant. The diversity problems in the research methods and technology also ensure the need to solve the inter-disciplines with the interdisciplinary studies that can address all stakeholders. Therefore, it is important to add neglected education stakeholders in field research. It is also thought that it will be useful in

increasing the validity of the generated information and increasing the number and variety of those who will benefit from this information.

The research findings show that the knowledge produced in the field of educational administration is mostly for describing the situation and explaining the causes, while knowledge concerning predicting and controlling is less common. Demirhan (2015) also found in their research that the knowledge produced is at the level of situation detection and explanation, although they favored the knowledge at the controlling level. This is a striking finding regarding domain knowledge, as it becomes an important premise in arguing that the applied side of the field of educational administration science continues to be overlooked. Özdemir (2018) emphasizes that the field of educational administration is a field of science and practice which aims to use the knowledge in the field to solve concrete problems. Since the 1960s, scholars have emphasized the difficulty of developing practice and generating the theoretical and practical knowledge needed to adequately solve practitioners' problems in the field (Oplatka, 2008, p. 26). However, the functions of science need to be investigated more in terms of social sciences, and more research is needed on this subject. Donmoyer (2020) noted that the epistemological and methodological debates in the field in the 20th and 21st centuries were interestingly similar. These discussions focus almost exclusively on epistemological and methodological issues, largely ignoring everyday problems in practice. It is thought that a research culture is needed to identify a problem, to identify the factors causing the problem, and to explain its possible causes in many ways, as well as produce knowledge to prevent the emergence of the problem or to keep the problem under control. Education systems are expected to have brought this understanding to students well before they reach the doctorate level.

As a result of the research, it was determined that the knowledge produced in the field contributed little to the concept, model, theory creation, and scale development/adaptation and practice. The lack of contribution to technology and technology development, especially within the scope of contribution to practice, was interpreted as an indicator of the lack of structuring theses as projects and ignoring interdisciplinary studies in the field. For example, studies on augmented reality and administrator training should also be carried out in terms of school supervision, such as the detection of certain points without problems, as in the cybernetic control theory. For this reason, it is necessary to question the contribution a thesis can make before accepting the proposal in the doctoral process.

While determining the topics of the theses, Stakeholder and Actor-Network Theories can be used by negotiating with other institutions, inviting them to thesis meetings, sharing the results, and asking for feedback. Young consultants can come together with experienced consultants and benefit from their expertise. Although universities have thesis writing guidelines and such thesis review criteria lists have been created before, a criteria list that takes into account the functions of science have not been found within the scope of the literature review. Although situational contextual information, which is a part of social sciences, is not considered unimportant, "Evaluation Criteria and Indicators for Knowledge Production in Theses", which reflect the philosophy in this research, can be used in order to increase the contribution to the concept, model, theory creation and practice in the preparation of theses (Ödemiş Keleş and Tonbul, 2020).

Conclusion

This research has tried to evaluate the scientific quality of the knowledge in the field and its contribution to practice by examining doctoral theses in terms of method, distribution of science according to its functions, concept, model, theory creation and scale development/adaptation. It is evident that qualitative studies dominate the knowledge produced in the field, and it is thought that the weaknesses of both methods can be covered with mixed designs in which qualitative and quantitative designs are used together. The intensive use of three or more techniques in both qualitative and mixed approaches in data collection increases the validity and reliability and helps establish the research on a solid foundation. It is important that the theses deal with all stakeholders of education in a balanced way, in terms of reaching more beneficiaries with the information. Thesis results can be compiled and collected through submitting them onto certain platforms, and the participation of the relevant stakeholders in the thesis juries can be ensured.

The level of knowledge to be produced in the thesis design stage is one of the functions of science and its contribution to practice should be questioned through concept, model, and theory creation. In addition, a research culture should be established in order to improve the use of applied research results by the beneficiaries. The educational administration discipline interacts with many other fields such as management, economy, sociology and psychology due to its overlapping subject basis. However, the discipline of educational administration should also develop its own concepts and theories. This development will also strengthen other disciplines and contribute to practice.

The selection of doctoral students, the quality of the researcher training process, the determination of thesis topics, and the healthy functioning of the thesis monitoring processes are important in the scientific quality of the doctoral theses produced. Reviewing these topics can increase the contribution of theses to practice. Social sciences need to review themselves in the context of the scientific quality of the knowledge produced with interdisciplinary studies and mixed patterns. In this study, no distinction was made in the theses produced by the consultants in the old and new periods, and the contributions of theses to the knowledge production in the field of educational administration can be examined by making such a distinction in future research.

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Appendix 1

Evaluation Criteria and Indicators of Knowledge Production in Theses

Evaluation criteria		**Indicators**
Fulfilling the functions of science	Describing the situation and explaining	- Descriptive statements such as definitions and explanatory cause and effect expressions
	Predicting	- To reveal how a situation that exists today will take shape in the future (For example, the consequences of an increase in the number of students in future employment, schooling) - Trying to explain a situation in the past but controlling it in the future, or specifying how a situation in the past explains present - Presence of correlation or regression analyses
	Controlling	- Presence of experimental and applied methods
Contribution to practice with concept & model development, theory building, scale development/adaptation	Concept development	- A new concept - Author statement referring to concept development
	Model development	- Aiming to develop a new model in line with the data obtained with quantitative and qualitative techniques - Determination that the model has been developed as a result of the above applications and the author's statement regarding this
	Theory building 1. A new theory 2. Contributing to the theory by treating a theory as a problem situation and processing it directly 3. Developing a new theory using previous theories	1. Creating a new theory by treating a theory as a problem situation and processing it directly, and author statement 2. Case of testing a theory by treating it directly as a problem case, and author statement 3. Author's statement that a new theory has been developed by making use of previous theories, and/or research findings (e.g., taking the magnetism theory and applying it to educational administration)
	Scale development/adaptation	Practices and author's statement regarding the development/adaptation of a new scale
	Contribution to the application 1. Contribution to technology/technology development 2. Contribution to developing a new perspective and way of doing things	1. Development of a new device, software, simulation, etc., and author statement 2. a) Applications such as models, theory building and experiments that offer a new perspective and way of doing things, and the author's statement about them[2] b) Developing a different approach, way of doing things, and suggesting a new paradigm by comparing previous and current practices with international practices

[2] It is thought that presenting a new perspective here can be possible only by creating a new theory, model or incorporating experiment in it.

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