



Methodological Flaws: A Review of Sample Masters Theses

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Authors' contributions

This work was carried out in collaboration among all authors. Author GT designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author TT managed the literature searches and analyses of the study. Author LP edited the first draft of the manuscript. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JESBS/2019/v31i1130139

Editor(s):

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Complete Peer review History: <http://www.sdiarticle3.com/review-history/49741>

Original Research Article

Received 05 April 2019

Accepted 20 June 2019

Published 26 June 2019

ABSTRACT

This paper reports results of a review of Masters theses from four academic units at the College of Education and Behavioral Studies, Addis Ababa University, Ethiopia. The purpose of this review was to explore and reflect on the appropriateness of research designs of Masters theses across four academic units. The review focused on the research designs, tools, methods of data analyses, and sampling used in the theses. A total of 121 Masters theses were randomly selected. Thematic analysis and descriptive statistics were used to analyse the data. The review found similar research designs adopted by theses across each academic unit. Findings common to the theses under review include: qualitative data analysis was hardly explained using appropriate methods of qualitative data analysis. In addition, in most of the theses, the sample size was not determined and justified using the proper sample size calculation formula or justification. Therefore, there is a need for the college and academic units on how the research course instructors and supervisors support students to craft their research designs

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properly. Finally, the researchers suggest that more studies of this kind need to be conducted in the broader context in other higher education institutions in order to build up a more coherent picture of the area.

Keywords: Methodological flaw; MA thesis; appropriateness; research design; academic units.

1. BACKGROUND OF THE STUDY

The role of higher education institutions in knowledge and skills creation and dissemination is paramount [1]. Abbott and Doucouliagos [2] argue that higher education institutions are the foundation for the research and human capital generating process. These days, the quality and quantity of scholarly research outputs produced by academics and their students are one of the principles set to evaluate the research output of higher education institutions [3,4]. Similarly, the issue of quality research output is an area of concern in the Ethiopian higher education institutions [5,6]. The Ethiopian Higher Education Proclamation specifies that teaching, conducting research and rendering community services are central to the mission of higher education institutions [7]. According to Kahsay [8], quality research outputs in higher education are vital for a country's economic, social, and political development. In view of this, higher education institutions are expected to carry out scientific research using a sound research methodology, which is the focus of this review.

The Ethiopian government has emphasized the role research in higher education plays in the economic growth and development of the country in the Growth and Transformation Plan II (GTP) [9]. As specified in the GTP-II, "The direction of the next five years plan is to ensure quality and relevance in the public and private higher education institutions" [9]. The GTP-II further stipulated that universities need to plan "to improve the quality of education and research activities in order to supply competent human power for the industrial sector in leadership, engineering and science fields" [9]. In this context, Addis Ababa University (AAU), which is the oldest and the biggest public university of the country and has been engaged in teaching, research and community service activities since its establishment in 1950. The AAU strategic plan is underpinned by its mission to become a premier research university in Africa [10-13]. The quality of research outputs apparently helps the university to achieve its mission, aspiration to become well known higher education research institution of the country.

As part of tackling both local and global pressures, Ethiopia has increased the number of its higher education institutions from two to eight in 1999 and currently there are to more than forty public universities [14,15]. Despite the tremendous expansion, there is a prevailing chorus of complaint among stakeholders about the quality of postgraduate research outputs [5, 13,16]. To approach the problem, Addis Ababa University, was one of the public universities that engaged to take the leading role in research activities [9,10]. AAU is witnessing a significant increase in the number of postgraduate students and research [10,12]. The increase in the number of postgraduate students was from 211 in 2000 [17] to 17,738 in 2019 [18] at AAU requires attention to be placed on the research training and quality of output for the institution. In Ethiopian public universities and AAU as well, postgraduate research output is considered as the final thesis report of a student when it meets university requirements and is approved by the thesis examining board. Approved thesis are publicly available [19]. However, achieving quality research outputs is a complex task, and little is known about the AAU learning and teaching of research study design as one component that may contribute to this end. Therefore, this review explores and reflects upon the appropriateness of research designs of Masters theses as academics are complaining about the quality of Masterss theses compared to doctoral dissertations at AAU [20,21]. The review was carried out across four academic units: Department of Curriculum and Instruction, Department of Educational Planning and Management, Department of Special Needs, and School of Psychology.

2. REVIEW OF LITERATURE

In the journey of research, crafting an appropriate study design and addressing the proposed research question is not an easy task for postgraduate students and beginner researchers [22,23]. This entails, the selection of research design is essential to taking up a research project so that the conclusion serves the purpose for which the project is undertaken. In line with this, Jonker and Pennink [22] argue

that “it is not surprising that in many studies – directed either at regular students, teachers or doctoral students – methodology forms a difficult, and preferably avoided, a subject of conversation [22]. In any academic journey, in order to carry out a quality piece of research, careful choices of methodology and methods are the key to success. However, most of the time the term ‘methodology’ and ‘method’ and ‘design’ are often used erratically and inconsistently among the graduate students [22-24].

A methodology is a justification for the research approach and the lens through which the analysis occurs [25]. Said another way, a methodology describes the general research strategy that outlines how research is to be undertaken, whereas methods identify means or modes of data collection and analysis [25]. Similarly, Cohen, Manion [24] pointed out that “Research methodology (approaches and research styles, e.g. survey; experimental; ethnographic/naturalistic; longitudinal; cross-sectional; historical; correlational; ex post facto) [24] whereas “methods, we mean that range of approaches used in educational research to gather data which are to be used as a basis for inference and interpretation, for explanation and prediction” [24]. Kothari [26] further added research methods refer to the techniques that are used to carry out research. On the other hand, the same author explained research methodology as a means to systematically solve the research problem, and it is a science of studying how research is done scientifically [26]. According to Kothari [26], a methodology is broader than research methods.

Thus, when we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others [26].

Drawing on Kothari [26]’s thinking, a methodology is broader than methods because methodology covers the theoretical and philosophical assumptions of particular interest of research while methods are not. Saunders [27] pointed out the distinction between the two terms, where methodology refers to the theory of how research should be undertaken, including the theoretical and philosophical assumptions

upon which research is based, [27]. On the other hand, methods refer to techniques and procedures used to obtain and analyse data, including for example questionnaires, observation, interviews, and document analysis as well as both quantitative (statistical) and qualitative (non-statistical) analysis techniques Saunders [27]. In the academic context, the methodology is often said to be the most relevant section of the project [28], yet in everyday research practice, it is not always treated accordingly.

A significant number of research outputs confuse *research design* with *methods* and *methodology*. It is common to see research design treated as a means of data collection rather than the guiding principle of the inquiry. Most of the time “research design” and “methodology” are incorrectly used interchangeably even though they are distinct concepts [29]. Marczak, DeMatteo, and Festinger [29] further explain that “methodology refers to the principles, procedures, and practices that govern research, whereas research design refers to the plan used to examine the question of interest” [29]. Leedy and Ormrod [30] concur further strengthening the distinction between the two terms as, “the research design provides the overall structure for the procedures the researcher follows, the data the researcher collects, and the data analyses the researcher conducts. Simply put, research design is planning” [30]. A research design is a conceptual structure and blueprint for data collection, measurement, and analysis of the data [26]. It is guided by the idea of ‘fitness for purpose’ [24]. In general, the research design explains what kind of data is required, what kind of methods are going to be employed for collection and analysis and overall, it tells how all of this is going to answer the proposed research questions.

3. THE CONTEXT OF THE STUDY

Nowadays, there is a prevailing complaint among university academics and leaders about the quality of MA research thesis of graduate students compared to doctoral research works at AAU [6,10,20,21]. For instance, Woldegiyorgis [5] argued that “Given the quality of graduates, and of those admitted into graduate programs, the research capacity of Ethiopian universities is in serious jeopardy” [5]. The researchers teaching experience and examining several MA theses at different departments of the College of Education and Behavioural Studies of Addis

Ababa University also confirms Woldegiyorgis's argument. This situation inspired the team to explore and reflect on the postgraduate students' MA theses at AAU. In addition to this, the University Senate legislation in article 95 (1) stipulated that "A thesis/dissertation shall constitute an individual's effort in academic pursuits to identify and analyse problems by applying sound methodology" [31]. Hence, the researchers believed that a critical review of AAU students MA thesis' research design and methods section would help both the institution and the university system participants such as, students, academics, and institutional leaders to see and feel the gaps to improve the quality of postgraduate research outputs in the future. With this in mind, the study is deemed to answer the following research questions.

3.1 Research Questions

1. What research designs and methods are being employed in AAU MA theses?
2. How appropriate were research designs and methods applied in AAU MA theses?
3. What are the implications of this review for quality postgraduate research?

4. METHODS AND MATERIALS

4.1 Study Design and Setting

This study used document analysis as a research method. According to Bowen [32] and [33], document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning on topics under investigation. Bowen [32] further argued that "Document analysis is a systematic procedure for reviewing or evaluating documents both printed and electronic (computer-based and Internet-transmitted) material" [32]. In qualitative research, like other analytical methods, document analysis needs data to be studied and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge [34]. Martin and Stella [35] note that the policy document, research papers, and records give the

researchers access to the necessary information and insights into the issue under investigation. In line with this idea, a thorough review of MA theses of four academic units at Addis Ababa University was made. The methodology section of the theses was analysed thematically, with themes drawn from literature on the use of appropriate methodology in a research project. Finally, the findings of the review of the theses from each sample academic unit was presented and its implication was also forwarded.

This study was conducted at one of the higher learning institutions, Addis Ababa University (AAU), Ethiopia. Founded in 1950 as University College of Addis Ababa, AAU is the biggest and oldest public university of the country, with a student population of 51,500 [36]. AAU has 10 colleges and approximately 70 departments delivering undergraduate and graduate programs. Among the ten colleges, the College of Education and Behavioural Studies was selected as the study area because it is the oldest college of AAU [31,36]. The college has also experienced, and senior faculties who engaged in research and teaching activities. In addition, the College has committed itself in preparing teachers, educational policy analysts, educational planners, educational managers/leaders, human resource developers, and trainers [37]. Therefore, much is expected from the college in terms of maintaining quality education, which comprises quality research outputs as well. The population of the study was all the academic units delivering post-graduate education programs in the college.

4.2 Sampling

Determining appropriate sample size depends upon the nature of the population of interest or the data to be gathered and analysed, and subject availability [30,38]. Accordingly, the sample size for the review was determined based on the recommendation by [26,39,40]. The review considered MA theses in the College from 2014-2018 as represented in Table 1 below.

Table 1. Total MA theses from 2014-2018 across the academic units

Academic units	2014	2015	2016	2017	2018	Total
Educational management and planning (EDPM)	65	20	29	23	5	142
Curriculum & instruction (CI)	34	12	12	4	0	62
Psychology	77	36	8	11	3	135
Special needs education (SNE)	32	12	12	8	0	64
Total	208	80	61	46	8	403

As indicated in Table 1, from 2014 to 2018, a total of 403 MA theses were found in the database of the university.

As specified in the Addis Ababa University School of Graduate Studies [19] thesis writing and grading grades guideline and the University Senate legislation, MA theses are rated as Excellent ≥ 85 A; Very Good $75 \leq X < 85$ B+ ; Good $60 \leq X < 75$ B; Satisfactory $50 \leq X < 60$ C+ ; Fail < 50 F. From the researchers' personal experience, it is only the thesis which is rated as 'excellent' or 'very good' that is available in the university database for public access. As recommended by Mills and Gay [39], for a descriptive study, "it is not uncommon to sample 10% to 20% of the population" [39]. However, the researchers sampled 30% of the total MA theses that are found in the database of the university to get a wider picture of the issues of the review. This idea is also supported by Leedy and Ormrod [30], and Best and Kahn [38] who argued having a large sample size is yet essential. Therefore, of 403 MA theses, 30% of the theses was sampled, and finally, 121 MA theses were selected for the review (see Table 2).

As can be seen from Table 2, after determining the sample size, the required total number of MA theses ($n=121$) were proportionally drawn from each academic unit using Pandey, Ashraf [41]'s formula: $n_i = \frac{N_i}{N} n$

where,

n_i = the number of MA theses required to be selected from a given academic unit with a total number of N_i MA theses, and the n =the total number of MA theses sampled from the four academic units with a total of MA theses= N . Finally, the required MA theses were selected using the simple random technique from each academic unit.

4.3 Data Gathering Instrument

Document analysis was employed to review the theses selected. As Bowen [32] argued, document analysis is a systematic procedure for reviewing both printed and electronic materials. The documents which might be used for reviewing study have a variety of forms such as "...manuals; background papers; books and brochures; diaries and journals; event programs (i.e., printed outlines); letters and memoranda; maps and charts; newspapers... [32]. Accordingly, the checklist was used as an instrument to collect the data. The checklist

covered the study designed, tools employed, data analysis, and sampling used in all the Masters theses selected. These grids of the checklist were prepared in order to maximize the consistency and the objectivity of the analysis. The review utilised Addis Ababa University graduate students' MA thesis, and considered associated legal documents, for instance, thesis assessment and grading guidelines, the University's Senate legislation, Ethiopian Higher Education Proclamation, and the Ethiopian Growth and Transformational Plan-II.

5. RESULTS AND DISCUSSION

This section presents the results and discussion pertaining to the data that emerged from the review of the MA theses. The section outlines the findings of each of the four Academic Units. The first academic unit is the School of Psychology. The findings of the review encompassed the research design used, tools employed, data analysis used, and the sampling process of the theses as indicated in Table 3.

As indicated in Table 3, the MA theses in the School of Psychology predominately used cross-sectional, descriptive, and qualitative research designs. Other designs such as correlational design, mixed methods, and quantitative research designs were also used in the methods section of the theses. From the review, it has also been learned that students used two different research designs, that is fused or merged different research designs in a study. In some theses, the research designs and procedures were clearly explained, but there were discrepancies in the use of appropriate terminology. For instance, cross-sectional study design was used with different terms such as cross-sectional survey research design, cross-sectional mixed methods design, cross-sectional design with the theses in School of Psychology. In a similar view, the remaining research designs, for example, descriptive, correlational, and others were given different names. This leads us to the question of whether students understood the concept of study design clearly or not. The use of two different designs at a time would also justify this. For instance, in some theses, two different designs were stated as the designs of the study. For example, 'descriptive survey and ¹ correlation research design'; 'descriptive and explanatory research design';

¹ Indicates the use of two study designs at a time in an MA thesis.

'exploratory sequential design and cross-sectional survey design'; 'sequential explanatory mixed method design and cross-sectional mixed method design'; 'quantitative and qualitative design and descriptive survey design' was claimed as the research designs in some of the theses. Also, the research designs were hardly explained in a few thesis (see Table 3). From this, it could be argued that students seem to lack some understanding of how to craft appropriate study design.

With regard to the study tools used, questionnaires and interviews were largely used. For the quantitative data analysis, both inferential and descriptive statistics were employed even though inferential statistics commonly used in the method sections of the thesis. The data collection tools such as interview, focus group discussion, document analysis, and observation were utilised for qualitative data collection. However, in most of the theses, methods of qualitative data analysis were not stated. Very few theses, (9 out of 36 theses) had explained "thematic analysis" as the method of the qualitative data analysis (see Table 3). The methods of analysis were inclined to the descriptive and inferential analyses with little attention to qualitative data analysis. If the students were using the qualitative data as part of their study, they would not have listed the tools as a means of qualitative data collection. Sometimes, qualitative data collection instruments were used arbitrarily without serious consideration on how to analyse and use the data that collected through qualitative data gathering instruments such as interview, observation, document analysis, and focused group discussion.

In order to examine the sampling employed, the sample thesis were grouped into three categories: reasonable justification, without reasonable justification, and without justification. 21 out of 41 MA theses, determined their sample size with justification. A significant number of the theses, nearly 18 out of 41 theses did not determine and justify their sample size (see Table 3). Sampling issues are also at the heart of

research. As Leedy and Ormrod [30] argued, "Sampling is a concern for any researcher, but it is especially so for the researcher who wants to draw inferences about a large population" [30]. This shows, study power determination is an area of concern and students need support on how to determine sample size. The respective academic unit is expected to equip students with the necessary knowledge and skills in determining their study sample size in the future.

In the previous discussion, we have seen the review of theses from the School of Psychology. The next discussion is about the finding of the review of MA theses from the Department of Educational Planning and Management (EDPM) as indicated in Table 4.

As shown in Table 4, most of the MA theses from the Department of Educational Planning and Management (EDPM) employed a descriptive study design. From 43 MA theses, 27 used descriptive research designs. However, within the same department, different terms were used to explain the descriptive research designs, namely, 'descriptive survey method,' 'descriptive survey research,' 'descriptive survey research method,' 'descriptive survey study,' 'descriptive research,' and 'descriptive survey design.' There is no problem with the use of different terms if the students clearly identify the concept behind the terms. For instance, if students understand the difference between, design, methods, and approaches, using different terms interchangeably do not create any problem as the concept is the main guiding principles. However, the problem lies if the students misunderstood the difference between those terms, using different terms without understanding the concept will apparently affect the research processes. This is evident from the review that students did not clearly conceptualise the terms as the research designs, tools employed and methods of data analysis were not properly aligned (See Table 4). In line with this, Velentgas, Dreyer [42] argued that "the choice of study design often has profound consequences for the causal interpretation of study results" [42].

Table 2. Sampled theses

Academic units	2014	2015	2016	2017	2018	Total
Educational management and planning (EDPM)	20	6	9	7	2	43
Curriculum & instruction (CI)	10	4	4	1	0	19
Psychology	23	11	2	3	1	41
Special needs education (SNE)	10	4	4	2	0	19
Total	62	24	18	14	2	121

Table 3. Reviewed MA theses in the school of psychology

Research designs used (n=41)	Tools employed						Data analysis used				Sampling		
	Questionnaire	Test	Interview	Focus group discussion	Document analysis	Observation	Descriptive statistics	Inferential analysis	Both	Thematic analysis	determined with reasonable justification	determined without reasonable justification	not justified
Cross-sectional design (n=9)	9	1	2	-	-	-	1	7	1	-	3	-	6
Descriptive (n=8)	8	-	3	2	-	2	2	2	4	1	5	-	3
Qualitative (n=6)	1	-	6	1	1	2	-	-	1	5	4	-	2
Merged/Fused (n=5)	4	1	2	2	2	1	-	1	2	2	2	1	2
Correlational design (n=4)	4	-	1	-	-	-	-	-	4	-	2	-	2
Mixed (n=3)	3	1	2	-	-	1	1	1		1	1	1	1
Quantitative (n=3)	3	-	1	-	-	-	-	1	2	-	1	-	2
Unstated (n=3)	3	-	-	-	-	-	-	2	1	-	3	-	-
Total	35	3	17	5	3	6	4	14	15	9	21	3	18

Table 4. Reviewed MA theses in the department of EDPM

Research designs used (n=43)	Tools employed						Data analysis used				Sampling		
	Questionnaire	Interview	Focus group discussion	Document analysis	Observation	test	Descriptive statistics	Inferential analysis	both	thematic	determined with reasonable justification	determined without reasonable justification	not justified
Descriptive (27)	27	23	8	13	6	-	21	2	4	8	3	5	19
Merged/fused design (7)	7	7	1	2	1	-	4	-	3	3	2	-	5
Mixed approaches (4)	4	4	-	-	-	-	3	-	1	1	1	1	2
Correlational (3)	3	2	-	1	1	1	1	2	-	-	2	1	-
Explanatory research design (1)	1	-	-	-	-	-	-	1	-	-	1	-	-
Quasi-experimental design (1)	1	1	-	-	1	1	-	1		1	-	-	1
Total	43	37	9	16	9	2	29	6	8	13	9	7	27

Table 5. Reviewed MA theses of the department of curriculum and instruction

Research designs used (n=19)	Tools employed				Data analysis used				Sampling			
	Questionnaire	Interview	Focused group discussion	Document analysis	Observation	Descriptive statistics	Inferential analysis	both	thematic	determined with reasonable justification	determined without reasonable justification	not justified
Descriptive (n=11)	11	9	4	7	3	9	1	1	5	1	5	5
Mixed (n=5)	5	5	4	2	1	5	-	-	2	-	1	4
Qualitative (n=3)	3	3	1	-	1	2	-	-	1	-	-	3
Total	19	17	9	9	5	16	1	1	7	1	6	12

Table 6. Reviewed MA theses of the department of special needs education

Research designs used (n=19)	Tools employed				Data analysis used				Sampling			
	Questionnaire	Interview	Focused group discussion	Document analysis	Observation	Descriptive statistics	Inferential analysis	both	thematic	with reasonable justification	determined without reasonable justification	not justified
Qualitative (n=10)	4	10	8	2	10	4	-	-	5	1	-	9
Mixed (n=5)	3	4	2	3	3	4	-	1	-	-	1	4
Descriptive (n=2)	1	1	-	-	-	1	1	-	-	-	-	2
Merged/fused (n=2)	2	2	-	1	-	1	1	-	-	1	-	1
Total	10	17	10	6	13	10	2	1	5	2	1	16

In spite of this, some of the theses employed which refers to the use of more than one study design. This may infer that either student did not fully grasp the knowledge of study design or did not get supervision. However, the Addis Ababa University Academic Senate legislation specifies, "The academic advisor of the graduate student provides advice to the student both on general academic matters such as course enrolment and choice of specialization and on the organization and supervision of the student's research and writing and/or or preparation for a comprehensive/qualifying exam [31]. Therefore, advisors are expected to guide students to properly structure their study design as it is a foundation of the analysis and interpretation for the result of a study [30].

Concerning the data collection tools used, questionnaires and interviews were mainly utilised. Other tools such as document analysis, focus group discussion, observation, and testing were employed as additional means of data collection. Almost, all the theses employed more than one tool for data collection except one study (Explanatory research design, see Table 4), which used only questionnaire as data collection instrument. Despite the use of different data collections tools, the theses widely employed descriptive statistics (frequency, percentage, mean, and standard deviation) with few inferential statistics, and thematic analysis for quantitative and qualitative data analysis respectively. If we take the descriptive study design (see Table 4), as an example, 23 interviews, 13 document analyses, eight focus group discussions, and six observation utilised in the 27 MA theses. These are all qualitative data collection tools. However, only eight theses explained 'thematic analysis' as the methods of qualitative data analyses, and the remaining were silent about its methods of analyses. Therefore, from the review, it appears to us that students lack full understanding about the methods of qualitative data analysis, that is, how to analyse the qualitative data collected through different tools (interviews, document analysis, focused group discussion, and observation). In addition, the qualitative data were also rarely analysed and interpreted in the body of the theses. Most of the results of the theses were reported using descriptive statistics (percentage, frequency, mean and standard deviation), and a very few theses (6 out of 43 theses) employed analytic analysis.

As shown in Table 4, out of 43 theses, the majority (n=27) did not justify the sample size

fused/merged research designs (see Table 4), employed in the studies. They merely mentioned the simple size, for example, 317 (thesis 32), 347 (thesis 33), and 362 (thesis 13), and so on. A few theses, 7 out of 43 (see Table 4) determined the sample size without reasonable justification. At some point, the students tried to mention the percentage, to mention some, 40% of the population (N = 547; thesis 1), 50% of the population (N = 1353; thesis 22), and 63% of the population (N = 448; thesis 7) and so on without any justification of why such a figure was used to determine the study power. However, 9 theses did determine their study power with reasonable justification. Overall, the sampling size determination was another area of concern for this academic unit.

The finding of the review of MA theses from the Department of Curriculum and Instruction is presented in Table 5.

Similar to the Department of Educational Planning and Management, the MA theses in the Department of Curriculum and Instruction mainly used descriptive study design. As displayed in Table 5, 11 out of 19 theses employed descriptive study design followed by mixed methods (n=5), and qualitative study design (n=3). Nevertheless, the research designs employed were explained by using different terms. In fact, this could be attributed to different assumptions such as knowledge of study design (confusion on the difference between, study design, methods, and approaches), language problem (vocabularies on technical research terms), lack of proper supervision, lack of critical reading and so on. A similar problem was identified in EDPM and Psychology academic units.

As indicated in Table 5, questionnaire and interview were the primary tools employed in the theses followed by document analysis, focus group discussion, and observation. Descriptive statistics was mainly used as the methods of data analysis. Even though different tools of qualitative data collection were also used, little attention was given to methods of qualitative data analysis. It is unusual to employ a closed questionnaire as a data collection tool and descriptive statistics as methods of data analysis in qualitative study design (see Table 5). In line with this idea, Leedy and Ormrod [30] argued that "Qualitative research involves looking at characteristics, or qualities, that cannot be entirely reduced to numerical values. A qualitative researcher typically aims to examine

the many nuances and complexities of a particular phenomenon” [30]. Marczyk, DeMatteo [29] also further argued that “qualitative research is characterised by the fact that the researcher works on the basis of an open question” [29]. From this, the students could not have employed numerical values when only the qualitative approach was cited as the study design. This shows that students lack a full understanding of the study design and appropriate tools need to be utilised for that design.

Regarding the sample size determination, 12 out of 19 theses could not determine their study power. Only one thesis did determine the sample size with reasonable justification. The remaining 6 theses attempted to determine their sample size using percentage, for example, 20% of the population (N=871; thesis 3), 70% of the population (N=1082; thesis 14), 46.6% of the population (N=494: thesis 6), but, they did not justify the proposed percent for determining the sample size.

The finding of the review of MA theses from the Department of Special Needs Education is presented in Table 6 that follows.

As opposed to the previous academic units, which were characterised by more of quantitative in nature, the theses from this academic unit are marked by qualitative research methods (see Table 6). As can be seen from Table 6, from 19 theses, 10 of them employed a qualitative research method. However, different terms were used to explain the qualitative research method as the main design of the study. In two MA theses, more than one study design was reported. Similar problems have been identified from the other three sample academic units.

With regard to data collection tools employed, interview and observation were used as the main tools followed by focus group discussion, questionnaire, and document analysis. Even though most of the theses used different qualitative data collection tools, only five theses explained ‘thematic analysis’ as a technique of qualitative data analysis. From the review, it seems students could not acquire enough research knowledge and skills because, in most of the theses, students preferred to keep aside from analysing and reporting the results of qualitative data. They even preferred to quantify the qualitative data and report using descriptive statistics (frequency and percentage). The data in Table 6 also confirm this circumstance, where

four theses employed descriptive statistics in qualitative research methods.

When it comes to sampling, 12 out of 19 theses did not determine and justify the number of research participants (see Table 6). Only two theses scientifically determined their sample size using appropriate sample size determination formula. Even if, unlike quantitative, sample determination for qualitative research is not rigid in most cases, yet a researcher needs to justify the number of participants needed for the study. Concerning this, Morse [43] propose the following sample determination for qualitative research:

If, when using semi-structured interviews, one obtains a small amount of data per interview question (i.e., relatively shallow data), then to obtain the richness of data required for qualitative analysis, one needs a large number of participants (at least 30 to 60). If, on the other hand, one is doing a phenomenological study and interviewing each person many times, one has a large amount of data for each participant and therefore needs fewer participants in the study (perhaps only 6 to 10). Grounded theory, with two to three unstructured interviews per person, may need 20 to 30 participants...[43].

From Morse [43]’s argument, a researcher also needs to justify the sample size for the qualitative research though this was not the case for most of the sample theses of this academic unit.

6. CONCLUSION AND IMPLICATIONS

This paper reported a review and document analysis of the content of MA theses of four academic units at the College of Education and Behavioural Studies, Addis Ababa University. The analysis focused mainly on the study design used, tools employed, methods of analyses utilised, and sampling determination. The results of the review indicated that the theses from each academic unit had almost similar and repetitive study design. For instance, the MA theses from EDPM and Curriculum and Instruction academic units were characterised by descriptive research designs. The theses of the Psychology academic unit employed more of cross-sectional and correlational research designs while Special needs followed a qualitative research method. This repetitive use of similar study design in each academic unit could be ascribed to different assumptions such as organisational culture (the influence of the research designs of previous MA

thesis available as references), the influence of instructors who offer research methodology courses, and the influence of supervisors, and students' study design preferences, and so forth. From the four academic units, the theses from the School of Psychology were characterised by analytical research whereas the rest followed a descriptive research approach.

The review also revealed that different tools were used to collect both quantitative and qualitative data. However, the qualitative data analysis and report of the results were hardly discussed using appropriate methods of qualitative data analysis, that is, thematic analysis and emerging themes from the data.

From the review of the theses, sampling was also found as an area of concern. Most of the theses from the sample academic units did not determine and justify properly the sample size of their studies. However, relatively, the theses from the Psychology academic unit managed to determine the sample of study using appropriate sample size calculation formula.

In general, the review of the MA theses of the sample academic units revealed some methodological flaws of the theses because the research designs, tools employed, the analyses used, and sampling of the studies were not well connected. From the finding of the review, almost the homogenous research design is employed by the students of each academic unit in writing their thesis. The reasons why students used a similar research design in their respective academic unit left open for further investigation. Students should be supported with the necessary knowledge and skills on how to craft their research design properly, and align the research design with tools of data collection and analysis. They need to be also equipped with how to determine the sample size of the study scientifically. Finally, the researchers suggest that more studies of this kind need to be conducted on this area in the broader context of other higher education institutions in order to build up a more coherent picture of the area.

ETHICAL APPROVAL

As specified in the thesis writing guideline and Senate legislation of Addis Ababa University (Addis Ababa University, 2013; Addis Ababa University School of Graduate Studies, 2012), copies of the thesis made publicly available on online database, and as widely as possible, in

keeping with one of AAU's primary goal of disseminating knowledge. The University's Senate legislation further stipulated that all the copies of the theses from the academic units shall remain property of the University and as such the University may utilize the same by making, such copies, among others, part of its online database. Accordingly, contact was made with the university for the permission to use the thesis for this study from the online database, and permission was granted.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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