Content Analysis of Management Doctoral Thesis in Indian Universities

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Abstract
The discipline of Business management is witnessing a considerable increase in the number of applicants in Ph.D. programs in Indian Universities. Amidst the growing demand for studies based on content analysis of doctoral thesis, this study explores the trends in management thesis submitted during the last twenty years in Indian Universities. The study utilizes quantitative content analysis on dissertations published by Indian Universities within the last twenty years (2000–2020) to present a research business thesis submitted in Indian Universities. The results from the quantitative content analysis of the business management thesis shall help the researchers understand scholarship expectations and identify deficiencies for better policy and practices.

Introduction

Ph.D. programs, the essential requirement for an academic career in higher education are in vogue in India for training and employing academic researchers.[1] The doctoral programs also train Industry leaders in various business areas.[2] The Ph.D. program involves significant independent research toward making an original contribution to knowledge through a thesis.[3] As a demanding qualification, Ph.D. expects scholars to demonstrate expert knowledge and various skills and attributes, such as creativity and analytical ability.[4] The high degree of complexity leads several scholars to struggle to understand the requirements and expectations of the program.[5] The lack of studies on dissertations trends and their topics, therefore, expects researchers to explore how researchers engage in their dissertation phases.[6] Several critical gaps can be found, especially in their research methodologies and the extent to which they explore their dissertation topics.[7,8] Our study extends the research to the Indian business management

Doctoral thesis by applying quantitative content analysis techniques. The quantitative technique is a systematic and objective analysis of informational characteristics.[9] The method has been successful incommunications, marketing, and psychology for analyzing trends and identifying patterns of covariation in message characteristics. According to,[10] this technique can offer valuable insights to researchers about the "tribe and territories" of their field. Improving practice and informing policy is another benefit of content analysis that can help identify common research deficiencies.

The highest education regulatory body University Grants Commission reports 40813 Ph.D. degrees and 25787 M.Phil Degrees being awarded in various fields in the year 2018 in India. The data suggests a plethora of doctoral thesis being added to the doctoral research works every year.[11] The rise in numbers has raised concern regarding the quality of research works in the form of the thesis submitted annually. A study by[12] lays down principles that shape the quality of the thesis, among which precision, perfect format, critical tone, and sound methodology must be given utmost attention. Similarly,[13] have advocated a substitute for the traditional dissertation format. The new approach is based on co-citation for quantitatively measuring knowledge structures, values knowledge, and knowledge producers. To conform to the change and refinement of guidelines during the candidature of doctoral students, an inquiry approach suggests developing policies and procedures to assist students in completing their thesis in time.[14] What needs to be understood is that the doctoral process is not merely about intellectual capacity. The process has to do more with becoming a researcher than completing a thesis.[15] However, by tradition, doctoral students are primarily prepared for academic careers despite immense saturation, which eventually compromises the quality of the thesis.

Therefore, the purposes of this study are a) to describe the characteristics of a Doctoral thesis in the management area in Indian Universities and (b) to identify trendsand patterns in these publications. It is expected that the results of this research shall offer insight into the expectations of scholarship and identify trends or deficiencies in the thesis that policymakers can improve upon. Although the study's scope is exclusively limited to management, it may be the first step toward the contemporary analysis of educational theses and dissertations in other areas.

Literature Review

Indian higher education is the world's third-largest academic system after the USA and China, with 979 universities, of which 375 are privately managed.[16] In higher education, research constitutes an essential component of excellence to enhance the Institutional ranking. The academic scholars in India question the West's research paradigm due to its limited applicability in the Indian context. The need, therefore, is to reinvent the indigenous management research wheel to support India's peculiar development models that can lead to inclusive and sustainable growth.[17] However, several studies have pointed out India's poor standing in research due to the lack of an ecosystem to generate ideas, get them validated, and then published. Academic Institutions lack the infrastructure for quality research, resulting in just a few quality research projects.[7]

The faculty contribution in administration apart from teaching is another factor that hinders quality research output- apart from the lack of available funds, a very high faculty-student ratio (as high as 1:50 in some cases). Such Institutions employ many faculties without a doctorate with a poorly designed curriculum that does not meet employer expectations and stresses the pedagogy of teaching theoretical aspects rather than case analysis.[18] In contrast, for Ph.D. programs, the Indian Institute of Management claims International high standards, low faculty-student ratio, provision of cross-disciplinary & cross-functional research, renowned faculty, research collaboration with International faculty, excellent research facilities, subject-specific research centers, fellowship, and additional financial support for research-related activities. The research output serves private & public companies apart from Government and society. The unique framework provides the solution to the paradox of "cultural island," a label pasted on the Indian management system on account of a cross-cultural comparison of management practices and the need for context-specific research pertinent to the India[17]

Private Universities have also started contributing positively to the Indian research ecosystem by competing with prestigious centers of excellence like IITs and NIT'S. The study by[19] found that Private Universities lag slightly behind IITs but are double in research output compared to NITs. However, despite some of IIT's celebrity status in terms of the research indicators-they too are far behindin International rankings.[20] The heavily funded Central Universities lag considerably in international orders.[21] Serious policy interventions, therefore, are called for to bridge the gap. The number of Ph.D. candidates in India has quadrupled over the last decade in the questionable research infrastructure, lack of trained faculty members in a large number of Institutions, and growth of predatory journals (India contributed 35% of all articles between 2010 to 2014).

The requirement to publish two papers to be eligible for the Ph.D. award opened flood gates for predatory journals forcing the commission to revise the listing every quarter. The journals published by the Universities in India are not much different. The study by UGCs found that 88% of such journals are of poor quality. To counter the "pay and publish trash" culture, improve the quality of research in the Indian Universities, and promote ethical policies in research, the commission established the "Consortium for Academic Research and Ethics' (CARE).[22] Evaluation of the thesis is yet another challenge for Institutions. The primary criterion of awarding a Ph.D. is discussed by several scholars[23,24,25] there are hardly any studies that provide a framework for assessing the quality of a doctoral thesis.[26] In the Indian context, the thesis evaluation process is one of the most significant barriers to high-quality research output.[27]

However, a Ph.D. can still be challenging because of the time, effort required, and skills like creativity and analytical ability.[4] In the UK, a dropout rate of 20% of Ph.D. students is reported,[5] and in several countries, the Ph.D. completion rate is below 50%.[28,29] The Ph.D. *scholars are expected to make an* "original contribution to knowledge" through rigorous analysis. At the same time, there is much debate on what constitutes originality in a Ph.D. *Originality* as been defined as "the essential tension between accepted prior knowledge and discoveries or ideas".[30]

Scholars must pursue exploratory, theory testing, or problem-solving studies.[31] However, to solve the business world's problems- applying knowledge management, evaluating innovation in organizations, or to make supply chains more efficient, a professional doctorate DBA is recommended as a Ph.D. has a theoretical focus.[32] However, the importance of theory testing in regular Ph.D. programsis not to be underestimated. The statement "nothing is so practical as a good theory"[33] is as relevant now as it was six decades back on account of its ability to advance knowledge, lead research toward crucial questions, and enlighten management discipline.[34] Therefore, a promising Ph.D. increases theory and practical knowledge, leading to other researchers' recommendations and applications.

Establishing an academic career is the biggest motivation for research scholars to enroll in the doctoral program. It is argued that the theory testing approach to research will most likely lead to the Ph.D.[31] achievement within a reasonable period. Theory testing researchcan be a better option for research scholars because of high-quality theory and literature availability. Scholars have access to the already established norms for empirical work and data analysis techniques of such theories. In the backdrop of a dearth of comprehensive understanding of dissertation trends in business management, there is a need to explore the choices research scholars make when they engage in their dissertation phases. This study contributes to the existing literature and current practices by addressing the dissertation content analysis literature gaps. There is a call for such studies, especially in business.[27,35] The conclusions drawn from this study shall assist future research scholars while pursuing the thesis. The findings shall be a valuable source of information for educators and researchers to understand the trends in the business management dissertations. The study utilizes content analysis to identify similarities and differences between business dissertations published by Government and Private Universities within the last twenty years (2000–2020). The central research question is: Dodoctoral thesis differ significantly by research methodology, sample size, research type, and University. The following hypothesis is proposed based on the research questions raised in the study.

Hypothesis 1

The Ph.D. dissertations in Government and Private Universities would differ significantly by research type.

Hypothesis 2

The Ph.D. dissertations in Government and Private Universities would differ significantly by research methodology.

Hypothesis 3

The Ph.D. dissertations in Government and Private Universities would differ significantly by sample size.

The other research questions this study aims to answer include.

RQ1

What type of research is pursued by business management research scholars in Government and Private Universities?

RQ2

What research methodology is pursued by business management research scholars?

RQ3

What sample size is chosen in the business management thesis?

RQ4

What are the most popular statistical tests of significance used in a business management thesis?

RQ5

What are the most popular statistical techniques (for establishing relationships)?

RQ6

What are the most prevalent sampling techniques- (probability and non-probability) in a Ph.D. Management thesis?

Research Methodology
Sample

A search was conducted using a reservoir of Indian Theses "Shodhganga" managed by the University Grants Commission. The platform provides a platform for depositing Ph.D. theses by Universities and making them available to the entire scholarly community in open access

mode.[36] The search criteria of a Ph.D. thesis involved limiting the thesis published for the last twenty years. The search resulted in 3552 theses. The search results were sorted using the institution filter to ensure downloading the thesis from diverse Universities, allowing no more than a few theses from each University representing various management areas. Searching for the thesis that resembles the management domain closely continued till the target of one hundred theses was achieved. For the primary surveys based on random sampling technique, like our study, to get meaningful results, most statisticians agree on a minimum sample size of one hundred.[37] The thesis data was captured in an excel sheet where the title, university name, university type, date of thesis publication, methodology used, variety of statistical techniques used, sampling method, and sampling size was tabulated.

Procedure

Several statistical techniques were used to achieve the study's objectives. First, this study uses content analysis, a research technique for identifying, classifying, and categorizing the content trends, whether in textual, speech, images, or video.[38] Several studies on the content analysis of thesis and dissertations as a research technique have been used in several studies,[39, 40, 41] the study by[2] used content analysis to uncover the differences between DBA and Ph.D. dissertations in US universities. The first step of analysis involved recoding. The research type was coded into a binary variable (basic=0 and applied =1). A second cross-tabulation indicated the frequency of methodology adopted by applied and fundamental studies (Table 2). To examine the relationship between various variables (research type, methodology type, university type, and sample size), a bivariate correlation was conducted (Table 1). These variables have been explained in the following paragraphs to provide a clear understanding of such variables. Next, one-way Anova was used to explore group mean differences in applied versus primary PhD dissertations by research type, data analysis method, sample size, type of sampling, and University Type (Table 3). Finally, the frequency tabulation and descriptive statistics were used to identify the popular statistical techniques, sampling methods, and sample size.

Research Type

This study analyzed two basic research types-primary and applied, in which most academics are said to engage. The other names of this research are fundamental, theoretical, or pure research conducted to advance the knowledge or theoretical base.[42] Applied research, in comparison, is designed to meet a need or solve a problem and is associated with industry endeavors.[43] The research type data was collected from the thesis's abstract and clear from the study's title to test a theory or solve it.

Research Methods

Researchers classify data analysis techniques as qualitative or quantitative, most notably including studies by[44,45] The dissertations, like research studies, are classified – whether such studies use qualitative, quantitative, or mixed methods, that is, the combination of both the approaches.

Statistical Techniques

Numerous studies related to the review of statistical techniques in different disciplines convey the importance of such studies. Some notable publications based on a review of statistical methods include.[46,47,48,49] The data analysis techniques are classified into descriptive Statistics (Means, medians, modes, variances, standard deviations, and ranges), significance tests for comparing means(t-tests & ANOVA), identifying relationships: Correlation, Regression and nonparametric statistical tests (chi-squared test, chi-square test, the Mann-Whitney u test and the Wilcoxon signed-rank test, etc.).[50]

Data Analysis

Our study found that most of the doctoral management theses in universities, whether Government (85%) or private (82%), are based on applied research (Table 1). A bivariate correlation indicated a positive relationshipbetween research type (applied / basic) with methodology type, University Type (Government/ Private), and sample size (Table 2). However, a negative correlation was observed between methodology type and the sample size. The mean of the sample size was found to be 511, with a very high standard deviationof 426.

Table 1: Research type frequency in Government and Private Universities.

Research Type	Government Universities (N=66)	Government Universities %	Private Universities (N=34)	Private Universities %	Total
Basic Research	10	15	6	18	16
Applied Research	56	85	28	82	34
Total	66	100	34	100	100

Table 2: Research type frequency in Government and Private Universities.

	n	Mean	SD	Research Type	Methodology Type	University Type	Sample Size
Research Type	100	0.84	0.37	1			
Methodology Type	100	1.21	0.47	0.78**	1		
University Type	100	0.31	0.46	0.61**	0.022	1	
Sample Size	100	511	426.65	0.66**	-0.75**	0.17	1

**Sig $p < .01$ (two tailed).

Table 3: Methodological Frequency

Research Type	Government Universities (N=69)	Government Universities %	Private Universities (N=31)	Private Universities %
Quantitative Research	56	81	23	74
Qualitative Research	5	7	2	6
Mixed	8	12	6	20
Total	69	100	31	100

Our study found very high use of the quantitative methodology in Universities-81% for Government Universities and 74% in private universities (Table 3). The study found 12% use of the mixed methodology in Government Universities and 20% in Private universities. The qualitative technique was at least -7% in Government Universities and 6% in Private Universities. A one-way ANOVA on research type indicated that there is a significant group mean differences between University type and research type, $F(1, 99) = 0.370$, $p = 0.826$ ($> .05$) (Table 4), thereby accepting the hypothesis 1 of the study. Significant group mean differences in between methodology type size ($p > 0.05$), $F(1, 99) = 0.528013$, $p = 0.049$ (Table 5) and sample size ($p > 0.05$), $F(1, 99) = 5.28$, $p = 0.024$ (Table 6) and was observed rejecting hypothesis 2 and 3.

Table 4: One-way analysis of variance: Research Type

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.080	1	.080	.370	.826
Within Groups	21.310	98	.217		
Total	21.390	99			

Table 5: One-way analysis of variance: Methodology

Methodology Type	Sum of Squares	df	Mean Square	F	Sig
Between Groups	0.27	1	0.27	0.52	0.04
Within Groups	99	0.51			
Total	50.62	100			

Table 6: One-way analysis of variance: Sample Size

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	728898.641	1	728898.641	5.287	0.024
Within Groups	13235552.1	96	137870.334		
Total	13964450.74	97			

The analysis of statistical tests of significance (Table 7) used in the sample of the thesis revealed Anova as the most popular test used by the research scholars (46%), followed by the t-test (34%), Chi-Square (16%) and Z test (5%). Further, the results of the analysis of quantitative research techniques

used for identifying the relationship between variables (Table 8) indicated regression analysis to be the most popular statistical technique in the business doctoral thesis (29%), followed by Correlation (24%), Factor Analysis (23%), Structural Equation Modelling (10%), Discriminant analysis (5%), Cross tabulation (3%), Cluster analysis (3%), Path Analysis (2%), Conjoint Analysis (1%).

Table 7: Tests of significance in quantitative studies

Test	Type	Frequency	Per cent
ANOVA	Parametric	36	38
t-test	Parametric	27	29
Chi-square	Parametric	13	14
Z – test	Parametric	5	5

Table 8: Quantitative research technique for identifying relationship(N=93).

Tests for studying relationship	Frequency	Percentage
Regression analysis	27	29
Factor analysis	22	23
Correlation	23	24
Structural Equation Modelling	9	10
Discriminant analysis	3	5
Cross tabulation	3	3
Cluster analysis	3	3
Conjoint	1	1
Path analysis	2	2

Table 9: Descriptive statistics of Sample Size

Descriptive Statistics	
Mean	480
Median	400
Mode	500
Std. Deviation	348
Range	1536
Minimum	14
Maximum	1550

Table 10: Sampling Techniques used.

Sampling Techniques	Type	Frequency
Convenience sample	Non-probability	28
Random sampling	Probability sampling	24
Purposive Sampling	Non-probability	21
Judgement sampling	Non-probability	7
Quota sampling	Non-probability	6
Multistage sampling	Probability Sampling	5
Snowball sampling	Non-probability	5
Proportional sampling	Probability Sampling:	4
Total		100

The analysis of the sample size used for the thesis (Table 9) indicated the mean sample size ($\bar{x}$= 480), median ($\tilde{x}$=400), and mode (Mo=500). However, the sample displayed a substantial standard deviation (348) and an extensive range (1536). The results of tabulation of the sampling techniques used in the study (Table 10) indicated that convenience sampling was the most prevalent sampling technique used (n=28), followed by Random Sampling(n=24), Purposive Sampling(n=21), Judgement sampling(n=7), Quota sampling(n=6), Multistage sampling(n=5), Snowball sampling(n=5) and Proportional sampling(n=4). Such techniques represent (67%) nonprobability and 33% probability sampling techniques.

Discussion

The results highlight several significant findings. The results of the first research requestion raised by the study(type of research is pursued by business management research scholars in Government and Private Universities) have underpinned the overwhelming use of applied research(over eighty percent) in both University types- Government and Private. The overwhelming use of applied research, despite the established importance of the primary research as discussed in the literature, is baffling. The popularity of applied research among Ph.D. scholars across all types of Universities is puzzling, especially in the backdrop of the claim that basic research has traditionally been fundamental to the University's Mission and has been referred to as a contributor to innovation and economic growth. The preference for Industry related problems by research scholars who plan to enter the teaching

profession is baffling. The findings confirm[2] study identifying the same pattern in the USA for Ph.D. and DBA research scholars.

The second research question based on the test of the second hypothesis confirms that PhDs offered by the Government and Private Universities follow nearly a similar pattern in the methodology. The finding becomes more interesting as there is no significant group mean differences in research methodology and sample size. The difference exists in the choice of topics based on applied versus basic research type. The study established a very high reliance on using quantitative research techniques in a Ph.D. thesis. These findings confirm results on a review of research methodology that most business empirical studies are quantitative (87.3%).[51]

Qualitative research poses specific challenges to the researchers. Qualitative research is difficult and time-consuming compared to quantitative research.[52] Further studies are required to explore the barriers research scholars face in taking up qualitative research studies.The analysis of statistical tests of significance used in the sample thesis has found Anova as the most popular test, followed by the t-test Chi-Square tests. All such tests are parametric tests, and the absence of nonparametric tests from the list deserves attention. The possible explanation could be large sample sizes (>30or <40), which many studies consider not a problem,[53] especially in the backdrop of the belief according to which the true normality is deemed to be a myth.[54] The study has also found that among quantitative techniques-regression analysis is used by approximately one-third of doctoral thesis, followed by Correlation, Factor Analysis, and Structural Equation Modelling. Other methods sparingly used include Discriminant analysis, Cross tabulation, Cluster analysis, Path Analysis, and Conjoint Analysis. The dominant use of regression, Correlation, and factor analysis in management research studies is confirmed by several studies.[55] [56]
.
The analysis of sample size (third research question) has led to conclude that the sample size used in the thesis ranges from 14-1550, mean 480, and mode 400. Against the backdrop of the sample size determination basis, which includes research objectives, the statistical model used, and the assumptions in determining the sample size[57] these

findings offer a glimpse into the sample size range for comparative analysis with the other disciplines. The study identified the Convenience sample as the most prevalent sampling technique (research question four) used by one-third thesis, followed by Random sampling and Purposive Sampling-both techniques used by one-fifth of the thesis. Other techniques used by the scholars include Judgement sampling, Quota sampling, Multistage sampling, and Snowball sampling.

The high use of convenience sampling deserves attention on account of skepticism revolving around the technique, mainly when it is referred to as a "misused" sampling technique on account of researchers avoiding the scientific system of sampling and opting to choose the conveniently located data.[58] Finally, reliance on a very high proportion (67%) of non-random sampling techniques were observed in the studies. The increased use of such sampling techniques can be ascribed to their advantages, especially hypothesis development and scholars' budget and time constraints.[59] The analysis results on the popular statistical techniques (research question five) indicate that Anova is the most popular test, followed by the t-test, Chi-Square, and Z test. Further, regression analysis was the most popular statistical technique in the business doctoral thesis, followed by Correlation analysis, Factor Analysis, Structural Equation Modelling, Discriminant analysis, Cross tabulation, Cluster analysis, Path Analysis, and Conjoint Analysis.

Implications
This study is the first analysis of Indian universities' management dissertations and provides essential contextual information for meeting the research needs of faculty and scholars. Research can have easy access to the dissertation patterns (methodological, statistical, analytical), making the findings of this study applicable. Research scholars are expected to have a good understanding of concepts specific to the doctoral thesis. The study's results can be valuable information to the researchers who may find themselves 'stuck' on their Doctoral journey. The findings can also aid researchers in thesis development decisions and understanding possible changes in disciplinary methodologies and other research needs in the management field.

Recommendations for Ph.D. students, educators, and business schools.

Research Scholars
- Recognize the importance of basic research in Ph.D. research.
- Give thought to considering qualitative or mixed methodologies as well for your study.
- Understand the concepts of research methodology, especially the chosen methods of your study.
- Consider using advanced statistical methods Discriminant analysis, Cross tabulation, Cluster analysis, Path Analysis Conjoint Analysis. Structural equation modeling (SEM) Multi-Dimensional scaling for your study also.
- Consider using probability sampling techniques for your study unless there are no other options left.
- Don't rush into selecting topics for your thesis until you have adequately consulted theories from your chosen area.
- Develop an in-depth understanding of your chosen quantitative research techniques/data analysis, especially how it is interpreted and its use well justified.
- Be clear about how your research can contribute to the theory before embarking on a Doctoral journey.
- Be bold in presenting your ideas about research in conferences, seminars, and network events.
- Publish your work in a peer-reviewed journal before submitting your Ph.D. thesis.

Educators
- Encourage students to consider such thesis topics that are deeply rooted in theory.
- Motivate students to attend training programs focused on innovative research methodology topics and the presentation of data.
- During course work, give innovative assignments to the scholars like reviewing published studies and identifying the methodological strengths and weaknesses.
- Ensure that scholars have a well-justified reason for the methodological choice for each thesis objective. Also, the scholars need to come up with satisfactory explanations for selecting the statistical tools and techniques.
- Update your skills in the research methods by scholars by reading peer-reviewed studies and recommending such studies to scholars.
- Create an environment where the scholars present their work within and outside the University to expose them to real-world feedback.
- Discuss with scholars the expected standards by the targeted academic journals and ensure to give detailed feedback before submission.
- Upgrade your methodological skills by attending workshops regularly.

Conflict of Interest
The authors do not have any conflict of interest.

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