



Bibliometric analysis of geography doctoral dissertations in Calcutta University during 1935-2019

Niti Mollah

Librarian, Krishnath College, Berhampore, Murshidabad, Pin - 742101, West Bengal, India, E-mail: n.mollah24@gmail.com

Received: 14 April 2021; revised: 02 August 2021; accepted: 07 August 2021

Data pertaining to 359 doctoral theses from the Department of Geography, Calcutta University during 1935-2019 have been collected from the website of UGC-INFLIBNET, Central library of the Calcutta University and through a questionnaire survey of the currently serving faculty members and research scholars. The temporal pattern with decadal productivity, subject area classification as per Library of Congress Subject Headings (LCSH) and sub-classification (second level) and further sub-division (third level) based on narrow terms, supervisor-wise production of thesis, gender distribution of thesis guided and the productivity of supervisors, gender distribution of researchers, etc. are the dimensions analysed. The study shows that temporal distribution is widely asymmetric with a very few theses in the initial decades and many theses produced in the recent years. Similarly, though there is greater gender parity in recent years among the research scholars, there is gender bias towards male faculty members as for guidance of Ph. D. theses are concerned.

Keywords: Doctoral Dissertation; Geography; Human Geography; Calcutta University; Subject Headings; LCSH

Introduction

Geography education in India began in 1920 in Punjab University, by 1927 in Patna University, and by 1928 in Aligarh Muslim University (AMU)¹. The UG level study of geography started in AMU in 1924². The pre-independence period witnessed a slow spread of geography education. A few departments of geography were opened in quick succession: Calcutta University in 1941, Banaras Hindu University in 1946, Agra and Allahabad Universities in 1947, University of Madras in 1948 and University of Bombay in 1957¹. The AMU's website² records that the first post-graduate department in geography was opened in the Aligarh Muslim University in 1931. It took nearly 20 years on an average for an under-graduate department to become a post-graduate department of geography. It took 16 years for the Madras University to upgrade a one-year diploma programme in geography to a post-graduate department³. Between 1930 and 1950, only eight Indian universities had geography departments¹. Since 1952, geography departments began to be set up in more colleges and universities and by the 1980s, most of the universities in India had established geography departments.

Subiah¹ traces the trend of doctoral research in geography in India and opines that during the initial years, it was marked by a descriptive approach with a more emphasis on physical landscape and gazetteer

type of narrative writing. The second stage was marked by proliferation of geography much in the Indo-Gangetic plain region with studies that were more analytical in nature and interpretative in approach. With the expansion of geographical studies with more researchers and faculty members, research studies became increasingly more empirical and scientific; deductive approaches became more popular and quantitative methods were frequently adopted in the third stage. The final and the fourth stage is marked by application of computer technology along with wide-spread use of GIS and remote sensing technologies, culminating with the opening of Geospatial Science and Geoinformatics departments.

Some universities focused on specific areas, for example the thrust area of Aligarh Muslim University (AMU) has been agriculture, land use and nutrition; Panjab University focusses on population geography, Banaras Hindu University (BHU) on Regional and Settlement Geography, Calcutta University on Geomorphology and Hydrology and Center for Study of Regional Development (CSR), Jawaharlal Nehru University (JNU) on Regional Development and Planning.

History of geography education in West Bengal

The study of geography in West Bengal began with the opening of geography department in 1941 in the

Calcutta University under the aegis of legendary geographer Professor S P Chatterjee⁴. As per information available from the UGC and West Bengal Higher Education (WBHE) websites, today we have a total of 17 state universities and one central university in the state offering PG and doctoral level studies in geography. Out of total seventeen public funded universities six (Presidency University, Jadavpur University, Rabindra Bharati University, Aliah University, Raiganj University and Visva-Bharati) are unitary universities and remaining 11 are affiliating universities. In addition to these, there are 20 colleges offering PG courses, some of them offer Ph. D. too. Besides this network, the state has an Open University offering UG, PG and doctoral level studies and two universities namely Rabindra Bharati University and Vidyasagar University offering UG and PG courses through distance mode. Moreover, there are at least three private universities namely Adamas University, Seacom Skills University and Amity University that offer UG, PG and doctoral level studies.

Table 1 represents the five different phases of geographical studies in West Bengal. There are several newly established state universities which are under the process of opening a geography department. The temporal trend of opening new university departments shows that it is only in the beginning of the present century that it really picked up after the slow growth of nearly a half century.

As per the information available in the University of Calcutta website⁴, the department of geography began in 1941 at its College Street Campus under the aegis of the doyen of Indian geography, Prof. S P Chatterjee. Subsequently, the department was shifted to the Science College at the Taraknath Palit Shiksha Prangan in 1963. A museum, seminar/conference hall, a seminar library and The Geographical Society of India are also accommodated in the sprawling

department in addition to laboratories and classrooms. Till 2019 there have been two D. Litts, two D. Scs and over 350 Ph. D.s awarded. Moreover, around 150 Ph. D. scholars are registered in the department including the affiliated colleges where some of the faculty members are allowed to guide Ph. D. scholars. Alumni of this department have made significant contributions in the field of geography and planning in India and abroad.

Review of literature

Drysdale et al⁵ studied 205 doctoral and master's theses regarding the blended learning from ProQuest by dividing the research topics into different sub-topics and identified the gaps in research for further study. A study⁶ was conducted on 66 Ph. D theses and 22 Master's theses in tourism geography for the period of 1951-98, collected from Dissertation Abstracts International (DAI). There was an effort to portray a comprehensive picture of research topics as well as the universities where the researcher contributed. It was found that 1990s was the most productive period, whereas Canada was the leader in publications on tourism, tourist, travel, and ecotourism. At the same time, the author also found that North American universities and Canadian universities were the most prolific.

Meyer-Arendt & Lew⁷ conducted research and compiled the resulting bibliography on publication on recreation, tourism and sport, conducted by geographers in North America (US and Canada) during 1988-1998. They searched for works authored by North American (USA and Canadian) resident geographers or about North America by residents of other countries. The authors opined that "research in the sub-discipline needs to become more conceptual, international and integrative, and less descriptive, parochial and fragmented. The trends of the 1990s

Table 1 — Phases of development of Geographical study in West Bengal (W. B.)

| Period | No. of Universities | Name of the offering universities |
|-------------|---------------------|--|
| Before 1950 | 1 | Calcutta University (CU) |
| 1950-1975 | 3 | North Bengal University (NBU), Viswa-bharati University (VBU), University of Burdwan (BU) |
| 1975-2000 | 1 | Vidyasagar University (VU) |
| 2000-2010 | 5 | Kalyani University (KU), Rabindrabharati University (RBU), West Bengal State University (WBSU), Aliah University (AU), Netaji Subhas Open University (NSOU) |
| 2010 onward | 8 | Presidency University (PU), University of Gour Banga (UGB), Jadavpur University (JU), Diamond Harbour Women's University (DWU), Kazi Nazrul University (KANU), Sidho Kanho Birsha University (SKBU), Raiganj University (RGU), Cooch Behar Panchanan Barma University (CPBU) |

Source: Compiled from university websites

indicate that more rigorous methodology and more integrative approaches are being employed, holding promise for a vibrant future for recreation, tourism and sport studies in the geography.”

Özmen, Cephe and Kınık⁸ examined 137 doctoral theses on English language teaching and learning from the National Theses Database in Turkey during 2010-2014 which revealed 12 systematic and departmental problems. A bibliometric analysis⁹ has been made in the doctoral theses to identify the new research trend in Russian urban history since 2000-. The author found that the trend was different from Soviet approach and found that the priority directions of research included economic and demographic processes, city formation and administration, rural-urban relations and peasant migration to the cities, the development of industry and the workers' movement. It was observed that more recent researches are looking at the city through the prism of culture and it became the mainstream approach among the Russian urban scholars. The author also identified that in search of new approaches, researchers rediscovered the marginalised historians of Soviet era who considered cities as 'socio-cultural organism' or 'sociocultural space'. Another trend identified by the author is of greater emphasis on provincialism, discarding top-down approach and leaning on oral history and folklore to reconstruct the urban experience. The author found that comparative projects were nearly absent from the treasure of Russian dissertations.

According to Pandita and Singh¹⁰, Jawaharlal Nehru University, New Delhi produced the highest number of doctoral theses in humanities during 2010-14 among 127 Indian institutions. Moreover, they concluded that about 1046 doctoral theses were completed annually on an average of about 8 dissertations produced from each institution. Catling and Butt¹¹ examined innovation, originality and contribution to knowledge and building a record of doctoral research in geography and environmental education at global level. Through their study they “intended to stimulate discussion about a range of research themes at the international scale, while providing a useful record of the trends, questions, theoretical advances, activities and “hot topics” that have attracted doctoral researchers in different parts of the world.”

In a study on presence of Women in Geography in the Spanish Universities Garcia-Ramon, Castaner and Centelles¹² found that the presence of women

geographers in Spanish universities are fewer and in minority, especially in the top posts. The academic contributions of women geographers in the form of articles as well as unpublished M.A. theses and doctoral dissertations are fewer when compared to their numerical strength.

Hérubel Jean-Pierre¹³ examined geography dissertations for the years 1985-2002 to assess characteristics of production, dissertation type, institutional affiliation and geographical extension. The author opined that the study may be used as a template for other national researches, especially library science. The author studied three sample periods of 1980-1984, 1990-1994, and 2000-2004 to analyse salient characteristics of theses where disciplinary and multidisciplinary research is profiled and subjects of interest are mapped with respect to French media and press¹⁴.

The present literature review quite clearly reveals that there are not many bibliometric studies in geography in India. We under take a bibliometric analysis of geography doctoral dissertations in Calcutta University during 1935-2019.

Objectives of the study

- To draw temporal trend and to examine the decadal distribution of doctoral theses;
- To draw a sketch of gender-wise distribution of doctoral researchers;
- To assess the productivity of supervisors during the study period (1935-2019); and
- To identify subject area-wise distribution of theses.

Methodology

The present study is based on 359 Ph. D. theses awarded from the Department of Geography of Calcutta University, Kolkata during the period 1935 to 2019. The starting year is 1935 to accommodate a thesis completed in the university even before the beginning of the department in 1941 as one of the theses in geography was completed in 1935. The primary source of bibliographical details of the Ph. D. theses has been the Central Library of Calcutta University and Shodhganga database of UGC-INFLIBNET. The latter has been particularly useful for finding out the full text theses. Bibliometric data collected from these two sources have been supplemented by the information and data collected from the current working faculty members by administering a questionnaire and also through e-

mails and phone calls to them. The contemporary and recent research scholars have also been a good source of information. The study of temporal trends has been done by classifying theses into nine decades. Gender-wise distribution of theses by the researchers and gender based contribution of theses by the supervisors have also been examined. The productivity of theses has been calculated based on the production made during the service period in the department and the superannuated period of the supervisors retired from this department. The shifting of a supervisor from another institution and the theses produced during the period in the previous institution has not been counted for the calculation of productivity.

Ph. D. topics are categorised under different subject headings using online Library of Congress Subject Headings (LCSH)¹⁵. A three-tier classification of Ph. D. theses (title) based on subject headings has been done at three stages with the help of LCSH. At the first stage, the classification into two popular subject headings available in the LCSH from the perspective of existing dichotomy and dualism in geography in the form of fields called physical geography and human geography have been adopted. At the second stage, theses were classified based on narrow terms under physical and human geography available in the LCSH. Subsequently, the third stage of classification has been done on the basis of further narrow(er) terms under previously used broader terms. Both at the second and third stage of classification, a few new narrow terms have been introduced and a few replacements have been done in order to make it more meaningful as opined and advised by the subject experts in the Department of Geography, Calcutta University.

Results and Discussions

As many as 359 doctoral theses of geography of the department of Calcutta University completed during the study period from 1935 to 2019 have been analysed in the present study.

Temporal growth of Ph. D. theses

The decadal trend of theses produced in the Department of Geography of Calcutta University is given in Table 2. During the first three decades only two theses were produced with the trouble torn decade (1940-1949) having no record of awarding any doctoral degree to anyone. It was only from the 1960s that the pace of production of theses started picking up. However, the 1960s and 1970s have witnessed a

slow growth with 2.51% and 5.58% of the theses production in the respective periods. The surge was witnessed during the last decade of the previous century and the first decade of the present century where little over 18% theses were produced. It is also noticed that during this period, there has been a proliferation of the study of geography through the opening up of new departments in a number of colleges offering UG and PG courses. A quantum jump in the production of theses can be observed during 2010-2019 with 43.45% of all theses were awarded. This has become possible due to the huge demand of geography teachers in the newly introduced UG and PG level departments in the colleges. The production of doctoral theses shows (Fig. 1) a slow growth during the first four decades of history of geography research. The second stage (1970-79 to 2000-09) is marked by moderate but steady growth of theses leading to a relatively short third period (2010-19) of sharp rise in the production of Ph. D. thesis (43.45%).

Gender parity of the researchers

Unlike many aspects of gender parity in Indian society, the gender parity with respect to writing doctoral thesis in geography in Calcutta University is in favour of females. Out of the three hundred and fifty nine theses completed by the researchers of the department, as many as 61.56% are completed by females (Table 3). The higher share of Ph. D. theses by female researchers can be explained, at least partially, by the fact that a large number of colleges offering geography are girls' colleges¹⁶ whereas other colleges are open to all. The general scenario of low participation of females in higher education is one of the prime reasons for the low presence of females

Table 2 — Chronological distribution of the theses awarded during 1935-2019

| Decade | Production of theses | Percent to total | Cumulative Production of theses | Cumulative Percentage |
|-----------|----------------------|------------------|---------------------------------|-----------------------|
| 1930-1939 | 1 | 0.28 | 1 | 0.28 |
| 1940-1949 | 0 | 0 | 1 | 0.28 |
| 1950-1959 | 1 | 0.28 | 2 | 0.56 |
| 1960-1969 | 9 | 2.51 | 11 | 3.06 |
| 1970-1979 | 21 | 5.85 | 32 | 8.91 |
| 1980-1989 | 38 | 10.59 | 70 | 19.50 |
| 1990-1999 | 67 | 18.66 | 137 | 38.16 |
| 2000-2009 | 66 | 18.38 | 203 | 56.55 |
| 2010-2019 | 156 | 43.45 | 359 | 100.00 |
| Total | 359 | 100 | 816 | 227.30 |

Source: Computed by author based on Shodhganga and CU Central Library website

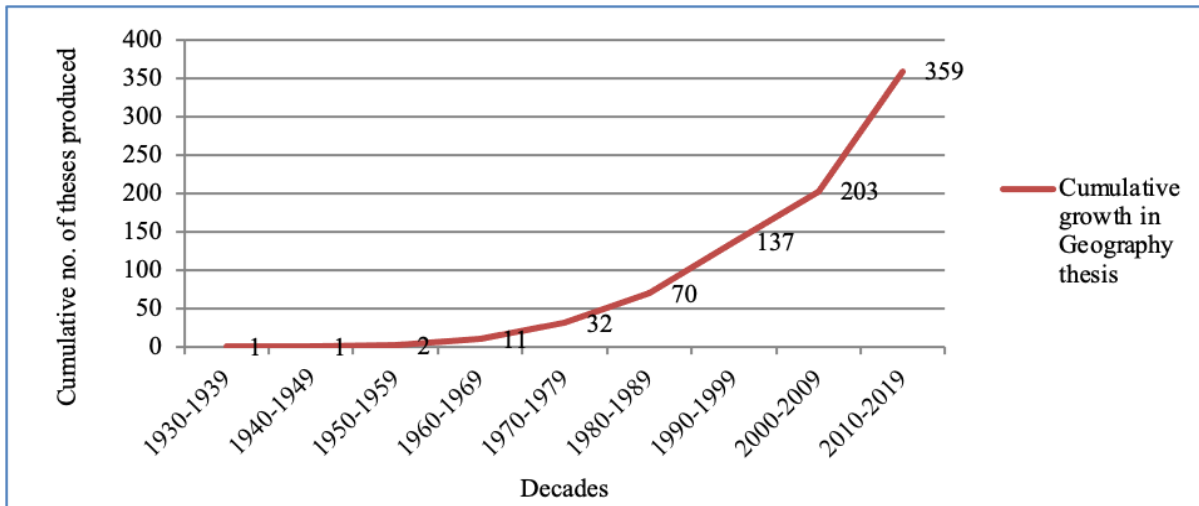


Fig. 1 — Trend of production of theses in geography (1935-2019)

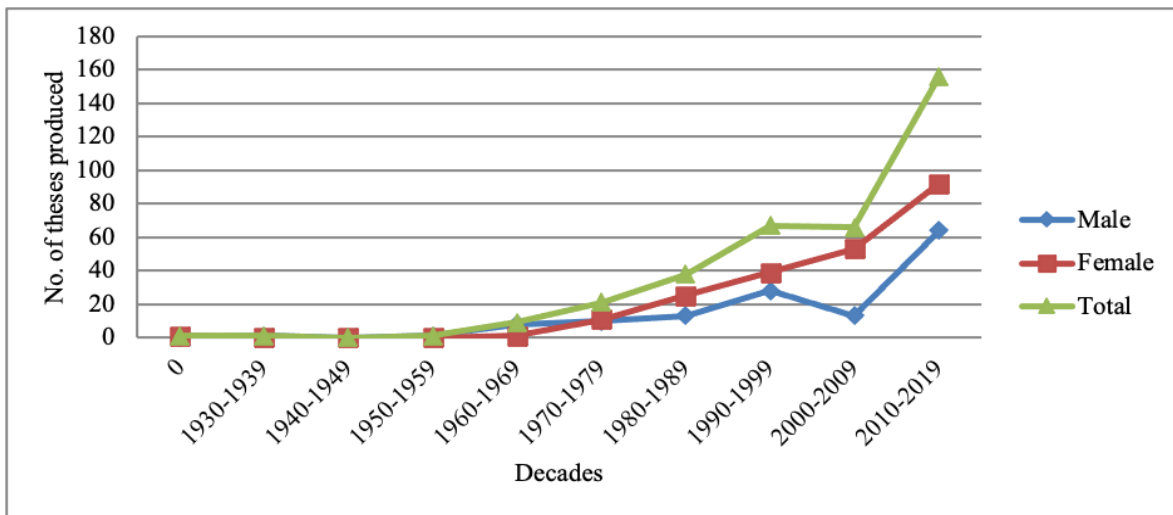


Fig. 2 — Gender-wise distribution of the research scholars

Table 3 — Decade-wise gender distribution of research scholars during 1935-2019

| Year | Male | Percent to total | Female | Percent to total | Total | Percent to total |
|-----------|------|------------------|--------|------------------|-------|------------------|
| 1930-1939 | 1 | 0.28 | 0 | 0 | 1 | 0.28 |
| 1940-1949 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1950-1959 | 1 | 0.28 | 0 | 0 | 1 | 0.28 |
| 1960-1969 | 8 | 2.23 | 1 | 0.28 | 9 | 2.51 |
| 1970-1979 | 10 | 2.79 | 11 | 3.06 | 21 | 5.85 |
| 1980-1989 | 13 | 3.63 | 25 | 6.96 | 38 | 10.59 |
| 1990-1999 | 28 | 7.80 | 39 | 10.86 | 67 | 18.66 |
| 2000-2009 | 13 | 3.63 | 53 | 14.76 | 66 | 18.38 |
| 2010-2019 | 64 | 17.83 | 92 | 25.62 | 156 | 43.45 |
| Total | 138 | 38.44 | 221 | 61.56 | 359 | 100.00 |

during the period during up to 1969 (Fig. 2). But in the 4th decade i.e. 1970-79, the number of theses by female candidates have surpassed male and this trend continued. The decades 1980-89 and 1990-99 have proved that doctoral level research on geography is a

rather green pasture for females but the gap has been moderate during these decades. However, in the last two decades, females produced four times more theses than their male counterparts. During the previous decade (2010-19), female researchers

produced nearly 1.5 times theses more than those by the male researchers.

Distribution of supervisors during 1935-2019

During the entire period (1935-2019) of doctoral level research work in the Department of Geography in the Calcutta University, there are records of 52 faculty members guiding research scholars. There are a number of colleges that offer PG level courses and the faculty members of such colleges with stipulated eligibility are allowed to undertake supervisory works at doctoral level. Erstwhile Presidency College, Chandannagar Govt. College, Lady Brabourne College, Ashutosh College, Vivekananda College, Vidyasagar College etc. are a few examples having a number of Ph. D. supervisors.

While analysing distribution of theses by gender of supervisors, it is found that out of total 359 theses, 73.08 per cent theses were completed under the guidance of male supervisors (Table 4). So far the joint supervision of theses is concerned, there are 11 such theses jointly guided by faculty members of the geography department of Calcutta University with faculty members of the eligible affiliated colleges.

An attempt has also been made to examine the gender-wise distribution of theses under different size categories by number. It is interesting to note that in the highest category of 25-29 and 30 and above theses there is no female supervisors. Even in the medium size categories such as 10-14 and 15-19 also there is no female supervisor. However, there is one female supervisor who guided 22 theses in the 20-24 size category. Dr. S. C. Mukhopadhyay is the only guide who has supervised more than 30 theses (Table 5).

Most of the theses under Dr. Mukhopadhyay are either in the geomorphology-hydrology or in the allied fields. The second highest producer of the thesis is Dr. Bireswar Banerjee who has guided at least 27 (7.52%) theses successfully. Like Dr. Mukhopadhyay, a large share of Ph.D. theses under Dr. Banerjee are also in geomorphology or allied fields of hydrology, watershed study etc. Dr. Ranjan Basu and Dr. Shukla Bhaduri also have completed at least 22 theses each during their service period in the department. Remaining 6 faculty members among top 10 Ph. D. guides have guided 11-17 researchers.

In the present analysis, there is a technical weakness that hampers calculation of productivity of individual supervisor. This is because of the fact that different supervisors worked for different periods of

time and few of them namely Dr. Ranjan Basu, Dr. Sunanda Bandopadhyay and many others changed their institutions and joined the present institution towards the end of their career. Similarly, due to change in the UGC¹⁷ and also university regulation¹⁸, the number of scholars that a guide can supervise has changed from time to time. Even the provision of guidance after superannuation has also changed over time. It is observed that while Dr. S. C. Mukhopadhyay has guided quite a few scholars even after his retirement but the same could not take place in case of Dr. Ranjan Basu and many others.

Subject area-wise distribution of theses

For studying the subject area-wise distribution, the theses have been divided into two major subdivisions of the subject area, namely physical geography [137 theses (38.16%)] and human geography [222 theses (61.84%)].

The further subject classification of as per Library of Congress Subject Headings (LCSH) resulted in 22 subject headings (second tier). Table 6 shows that geomorphology is the most popular field of research with 70 (19.50%) theses. The other popular areas of research are regional planning (13.09%), agricultural

Table 4 — Gender-wise distribution of supervisors and their productivity

| No. of theses | No. of supervisors | | | No. of theses |
|---------------|--------------------|-------------|-----------|---------------|
| | Male | Female | Total | |
| 30 and above | 1 | 0 | 1 | 63 |
| 25-29 | 1 | 0 | 1 | 27 |
| 20-24 | 1 | 1 | 2 | 46 |
| 15-19 | 2 | 0 | 2 | 32 |
| 10-14 | 5 | 0 | 5 | 61 |
| 05-09 | 10 | 4 | 14 | 84 |
| 01-04 | 18 | 9 | 27 | 40 |
| DNA | 0 | 0 | 0 | 6 |
| Total | 38 (73.08%) | 14 (26.92%) | 52 (100%) | 359 (100%) |

Table 5 — Top 10 productive supervisors with the number of theses produced

| Supervisor | No. of theses guided (N=359) | Percent (%) |
|------------------------|------------------------------|-------------|
| S.C. Mukhopadhyay | 63 | 17.55 |
| Bireswar Banerjee | 27 | 7.52 |
| Ranjan Basu | 24 | 6.68 |
| Shukla Bhaduri | 22 | 6.13 |
| Subash Ranjan Basu | 17 | 4.73 |
| Himanshu Ranjan Betal | 15 | 4.18 |
| Sudhir Malakar | 14 | 3.90 |
| Lakshminarayan Satpati | 14 | 3.90 |
| Kanan Gopal Bagchi | 12 | 3.34 |
| Apuraba Rabi Ghosh | 11 | 3.06 |

Table 6—Subject area-wise distribution of theses topics in geography

| Broad Field of research | Number of theses | Per cent (%) | Narrow subject headings (Second tier) | No. of theses | Percent to total (%) | | | |
|-------------------------|------------------|--------------|---------------------------------------|---------------|----------------------|--------------|-----|--------|
| Human Geography | 222 | 61.84 | Agricultural Geography | 39 | 10.86 | | | |
| | | | Economic Geography | 26 | 7.24 | | | |
| | | | Human Settlement | 38 | 10.58 | | | |
| | | | Political Geography | 2 | 0.56 | | | |
| | | | Population Geography | 31 | 8.63 | | | |
| | | | Regional Geography | 5 | 1.39 | | | |
| | | | Regional planning | 47 | 13.09 | | | |
| | | | Research Method | 1 | 0.28 | | | |
| | | | Social Geography | 15 | 4.18 | | | |
| | | | Tourism Geography | 5 | 1.40 | | | |
| | | | Transport geography | 7 | 1.95 | | | |
| | | | Urban Geography | 6 | 1.67 | | | |
| | | | Physical Geography | 137 | 38.16 | Biogeography | 2 | 0.56 |
| | | | | | | Cartography | 1 | 0.28 |
| Climatology | 4 | 1.11 | | | | | | |
| Environmental Geography | 23 | 6.41 | | | | | | |
| Geology | 1 | 0.28 | | | | | | |
| Geomorphology | 70 | 19.50 | | | | | | |
| Hydrology | 23 | 6.41 | | | | | | |
| Mathematical geography | 1 | 0.28 | | | | | | |
| Medical Geography | 11 | 3.06 | | | | | | |
| Remote Sensing | 1 | 0.28 | | | | | | |
| Total | 359 | 100.00 | | | | | 359 | 100.00 |

geography (10.85%), human settlement (10.58%), population geography (8.63%), economic geography (7.24%) and environmental geography (6.41%). On the other hand the least popular research areas are geology, cartography, research method, political geography and biogeography etc., where there are only 2 or 3 theses completed so far. The remaining 6 areas of research such as regional geography, social geography, tourism geography, transport geography, urban geography, and climatology are the subject areas where moderate numbers of theses ranging from 4 to 5 have been completed.

Conclusion

In the bibliometric studies of theses conducted by different scholars both in India and abroad, one of the largest and considerably old departments i.e. geography department (CU) in India is inconspicuous. The bibliometric study of geography theses produced in Calcutta University during 1935-2019 portrays a clear picture of prolific subject headings up to the third layer of classification based on LCSH, the productivity of research guides, and the gender dimension of researchers as well as research guides. While human geography contributed lion's share, only a minority of theses are in physical geography.

However, symmetry is not observed in terms of individual subject headings with geomorphology being the most popular subject heading having roughly one-fifth in physical geography whereas regional planning occupying top-notch with little over one-tenth of theses. The gender dimension is also found to be biased towards male research supervisors in terms of both share and productivity. However, unlike previous years, female research scholars are more noticeable in recent years. The present study covering some selected aspects of bibliometric analysis opens up scope for studying other aspects of bibliometrics of theses beyond the coverage in the present study. It may be considered as a base-level study for a further deeper and wider bibliometric analysis of of these theses.

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