Journal of Applied Economics and Business Studies (JAEBS)

Journal homepage: https://pepri.edu.pk/jaebs
ISSN (Print): 2523-2614
ISSN (Online) 2663-693X

A Descriptive Analysis of Research Culture in Pakistan with Contextual Reference to Management Sciences

Imran Naseem[1*] Saima Imran[2], Muhammad Tahir[3] & Bilal Bin Saeed[4]

[1] Honorary Associate, University of Liverpool School of Management Sciences, Liverpool, UK.
Assistant Professor, Department of Management Sciences, COMSATS University Islamabad, Abbottabad Campus, Pakistan.
[2] MS Scholar, Department of Development Studies, COMSATS University Islamabad, Abbottabad, Pakistan
[3] Assistant Professor, Department of Management Sciences, COMSATS University Islamabad, Abbottabad Campus, Pakistan.
[4] Assistant Professor, Department of Management Sciences, COMSATS University Islamabad, Abbottabad Campus, Pakistan.

ABSTRACT

The study takes on to gauge evolution of research culture in Pakistan with special focus to management sciences. The study is descriptive in script and exploratory in nature. Its primary analysis evolves around number of universities, PhDs produced, and their different contextual ratios. The study finds relatively recent emergence of certain strengths in terms of a research culture and anticipates an opportunity to build upon these strengths in future. Public universities with better experience are in the leading role in almost all domains and private and relevantly new universities lag behind a bit too far. If these could also start contributing, the near future could muster the fruit of a rich research culture.

Keywords
Research, Evolution; Management Sciences; Pakistan

JEL Classification
A20; A23; C44

1. Introduction

Developing countries, unlike developed ones, do not have strong research culture. These countries have strong roots in conventional teaching with remote inclination for knowledge-based economy (Salazar-Clemeña & Almonte-Acosta, 2007). Apparently, Pakistan also shares this trait. There is a huge difference between the top countries with strong research culture and the developing world in terms of GDP spending on R&D (Research and Development) expenditure. Whereas Israel has been spending on an average 3.9% of its GDP on R&D in the last 23 years and stands on top of the list, Germany spends 2.5% of its GDP and stands 10th on the list. None of the South Asian countries touches even 1% of GDP on R&D spending. Pakistan spends a meagre 0.3% of GDP on R&D. India stands above while Sri Lanka and Nepal stand below this percentage whereas data are missing for other South Asian countries. See Graph 1. Likewise, World Bank provides data for 31 out of 47 countries with lower middle

*imran.naseem@liverpool.ac.uk, drimran@cuiatd.edu.pk

income. Thirteen countries stand above Pakistan while 17 countries stand below on the list. Similar trend is seen in average researchers in R&D per million people. Israel again stands on top with 7771 researchers in R&D per million people. Pakistan on the other hand, though maximum in the region, has only 157 researchers in R&D per million people. See Graph 2. Similarly, it performs better than 17 and 10 countries perform better than Pakistan on the list of lower middle income where data are available for 28 countries. This development indicates that Pakistan is doing well in its respective region as well as among countries of relevant income group. This development can be easily traced back to the establishment of Higher Education Commission (HEC) of Pakistan that was established in 2002 on the recommendation of a Task Force for the Improvement of Higher Education. The task force blamed ineffectiveness of the administration, absence of required infrastructure, and incompetent academic researchers for decaying standards of public university education (Akbari & Naqvi, 2008). Consequently, a world record budget jumped 7 fold from 2002 to 2008. This increase in budget resulted in the increase of universities that grew from 74 to 145 and enrolled students grew from 276,000 to over ten lac from 2001 to 2012 respectively (Shaukat, 2012). Universities further grew to 195 in 2019 (Anon., 2019). A visible improvement in publication number can also be seen in the country which only published 68 IF articles in 1975 jumped to 1138 articles in 2005 and kept on leaping higher in 2010, 2015, and 2018 with 4452, 7833, and 12413 publications respectively. See Graph 3. Such great leaps put Pakistan on top of the countries that exhibited biggest rise in research output from 2017 to 2018. See Graph 4. However, this increase does not result from an even base as many universities still face the staff shortage, especially the remote ones. To mock it further, any government change brings volatility in HEC budget and performance (Shaukat, 2012), a clear indicator of the leadership importance. In US 15 out of top 20 universities are reported to be private (Bridgestock, 2013). It might be useful to have a comparison of public and private universities' performance. Similarly, women with PhD have been lesser in numbers historically but have been increasing over the time (Studio & Foundation, 2009). This would also be interesting to see if the same pattern prevails in Pakistani context. Since literature is predominantly from developed countries, it is hard to apply its finding on developing countries like Pakistan. This is why we assume it appropriate to explore research culture in Pakistan.

2. Literature Review

Different authors have given different definitions and explanation of research culture over the years. Schein, (1985) explained it in 6 different angles such as 1) Regulations observed in behavior, 2) Norms of the research, 3) the values dominating the research, 4) Research philosophy of the organization, 5) organizational culture, and 6) the research climate. Hauter explains it in the context of an organization that "how each individual should think, act and make decisions about research" (Hauter, 1993) while to Hill, (1999) it is an environment in which research grows and multiplies. Perhaps owing to these different definitions Evans,

(2009) terms research culture as vague concept hence Rosas, (2013) explains it as "a blind date with the unknown". However Mapa, (2017) puts it in routine work "the way we do research round here". The following sections present geographic review of literature in chronological order.

3. International Studies

Literature reflects inability of the research to give a complete set of variables to explain 'pan cultural' aspects to theorize it (Bhagat & McQuaid, 1982) (Shalom, H. Schwartz; Maria, 1995). Jan-Benedict, E.;Steenkamp, (2001) are also convinced that a limited set cannot properly explore all cultural forces at work. Hence, Dilworth-Anderson, Williams, & Gibson, (2002) and Farley & Deshpandé, (2004) revealed through review of international studies significant cultural differences in different countries whereas Craig & Douglas, (2006) found that these differences are mixing up with other cultures causing plurality, contamination, and hybridization. Culture, owing to its definitional diversity and measurement, also poses challenge to research, be it at group, organizational, or national level (Leidner & Kayworth, 2006).

Deshpande & Webster, (1989) do not consider culture as endogenous variable to firm when studying comparative management approach rather identify it as exogenous. Bland & Ruffin, (1992) highlight the significance of robust leadership among common features to develop a research culture. Bland & Ruffin, (1992) and Slade et al., (2018) advocate to give equal important in synergizing the consolidation and sustainability of employees as well as institutions rather than dealing the two aspects separately.

Leaders are equally pivotal at individual and institution base for not only setting clear research objectives but also to meritoriously communicate them. Management investment is another common framework (Slade, Philip, & Morris, 2018) for developing a research culture. For a given motivated and collaborative faculty, reasonable resource allocation for training and support, with the flexibility to give space to the faculty's area of interest, is central to any effort aiming at cultivating a robust research culture (Hanover, 2014) and we need this synergy and commitment for developing national research culture at a higher level. A Research culture may take reasonably long time to evolve, even in the presence of all prerequisites (Hanover, 2014). Researchers' compliance with the internationally accepted norms to transparency, openness, and productivity is a major challenge (VandenBos et al., 2015).

These international studies suggest absence of a common set of variables for a rich and healthy global research culture. However, leadership, considering employees and institute cohesively, provision of resources and training to the faculty along with flexibility of research in areas of interest, and a long timeframe are some potential variables that may help foster a research culture.

3.1 UK Studies

Ebbutt & Ebbutt, (2006) on the basis of studies conducted in the UK are contend about having a proper national mechanism that directly extends funds to the individuals or groups of teachers (even) at the school level. Sheffield University highlights 8 main variables of research culture in the UK i.e. a) Quality Research, b) Recruitment, c) Human Resource Development, d) Research Discussion, e) Departmental Structure, f) Culture, g) Management, and h) Doctoral Researchers ("Fostering an effective research environment," 2017). However, without compromising the role of competition and differential assessment, team work and collaborative efforts are still missing in the research culture (Sarah, 2018). It also fails to encourage the activities, from researcher's point of view, necessary for quality research. Hence, it needs to ensure efforts aiming at cultivating the culture of research support for the quality research practice (Notes, 2015).

These studies show that UK has a strong research culture with focus on a) quality research, b) recruitment, c) Human Resource Development, d) Research Discussion, e) Departmental Structure, f) Culture, g) Management, and h) Doctoral Researchers but still needs to encourage activities from researcher's point of view and research support for the quality research as envisioned in the international studies as well.

3.2 Scandinavian Studies (Denmark, Finland, Netherland)

Surfing the Scandinavian countries presents the vitality of action research in blossoming a research culture (Kjerholt & Hølge-Hazelton, 2018). Kessels & Keursten, (2002) emphasize the supporting skills to guarantee smooth knowledge construction in a knowledge economy, anticipating blessings to the future elite of knowledge workforces. The digital humanities in the area are in search of identity and creating new space for the research culture with reasonable skill set to look after swarm of problems. This can be attained only through national collaboration and synergizing the strengths of the existing digital humanities hubs (Matres, Oiva, & Tolonen, 2018). These studies indicate that action research, supporting skills, and digital humanities are important actors in the Scandinavian region.

3.3 Asia Pacific Studies (Australia, New Zealand)

Studies in this region, like international studies (Bland & Ruffin, 1992) (Slade et al., 2018), (Hanover, 2014), Scandinavia (Kjerholt & Hølge-Hazelton, 2018), and UK ("Fostering an effective research environment," 2017), Southeast Asia (Rosas, 2013), Schein (1985), also stress on the sturdy leadership for developing a vibrant research culture along with decentralization of the university management structure (Pratt, Margaritis, & Coy, 2007) (Marchant, 2009). A resilient leadership through optimal use of resources can change customary teaching loaded model into a more research oriented dynamic, facilitating creation of new knowledge which is essential to the universities' mission (Marchant, 2009). In a pursuit of evolving and maintaining research culture mentors must be available for the young

researchers, mentoring network can significantly contribute to research culture (Studman, 2003). Like Scandinavian countries, Asia Pacific studies also consider action research as an established way for developing the research skills (Ferguson, 1999). Research culture is nurtured at institutional and individual level. The former requires consistency and comfort in terms of knowledge sharing, research direction, research support, and resource availability while the latter requires inspiration, research skills development, the parallels between the study of research culture and the organizational culture (Hill, 2002).

Studies in the region highlight the importance of leadership, decentralization of university management system, optimal resource utility, mentoring network, action research, knowledge sharing, research direction, research support, resource availability, inspiration, and research skill development.

3.4 Southeast Asian Studies (Malaysia, Philippines, Vietnam)

While a study imitates a stated objective for research (Rosas, 2013), we also find stony reaction of the officials to acknowledge policy-practice gap and a less cooperative research culture, though, with a gradually developing appreciation for moving from orthodox quantitative research to qualitative one (Scott, Miller, & Lloyd, 2006). A research culture in its evolution may pass through phases like creating, growing, developing, and nurturing research (Anuar & Abdul, 2013). Mapa, (2017) classifies some significant causative features to research culture such as research policies, budget, benefits and incentives, research committees, culture and working environment, infrastructure, and inter-institute collaboration. Similarly, Dacles et al., (2016) identify that institutional support motivates individual faculty to get into the organizational culture. Their causative factors are research unit, incentive, expertise, research programs, and institutional policies where research output stands the weakest factor. However, individually targeted peripheral incentives are not sufficient to nurture a research culture, it needs an all-inclusive approach on behalf of the administrators to implant research in their culture (Teehankee, n.d.). However, whereas a sturdy research culture would cause in high research output, the same is not essentially correct vice versa (Anuar & Abdul, 2013) dissimilar to the many who believe in this bidirectional relation. These studies highlight the grey areas that need to improve such as acknowledging the policy-practice gap, less cooperative research culture, institutional support, and all-inclusive approach.

The same problem is true in India, outside Southeast Asia, where an inclination succeeds to treat research and publication alike causing failure of the organizations to have an honest research drive. Since publication are the result of individual requirements for its continued existence or promotion rather than culminating from a shared passion (Chakaraborty, 2017), there is a dire need to aim research culture rather than research publication. Developing countries have been recently seen appreciating the need for research orientation such as Mexico that is seeing a prevalence of research in the academic setting lately (Mendez & Cruz, 2014).

Similarly, China is seeing a research passion where the government funds for research have been increasing annually at the rate of more than 20% which is shocking even to the most excited scientists (Shi & Rao, 2010).

3.5 Pakistan Studies

Not much literature is available with contextual reference to Pakistan. However, with the establishing of Higher Education Commission in September 2002 (Akbari & Naqvi, 2008) Pakistan has been seeing an upward inclination in IF publications since 2002 and has seen amazing growth in producing PhDs (Lodhi, 2012) with a growing number of students registering for Masters' and Doctoral degrees. However, this does not bring the research culture any closer to being inspirational and the shortage of third party supervision and quality academic professionals adversely affect it (Agha, 2015). Besides referring to this trend as an indicator of approval of the research culture in the country, Lodhi, (2012) also warned for more hard work to get balance between prevailing teaching customs and a robust research culture in Pakistani universities. Agha, (2015) also approves it and points out adverse effects of absence of third party supervision and quality academic professionals ensuing in compromised caliber of Pakistani students. The study also classifies culture in three domains i.e. 1) an individual's ability to embark on research activities, whereas this ability can be built, improved, and refined through training, 2) human development through unstipulated medium, and 3) a set of shared concepts, customs, skills etc. held by some people that are transferred to their successors. These are diverse but valuable research culture features (Lodhi, 2012). According to Thomson Reuters, "In the last decade, Pakistan's scientific research productivity has increased by more than four times, from approximately 2,000 articles per year in 2006 to more than 9,000 articles in 2015. During this time, the number of Highly Cited Papers (HCPs) featuring Pakistan-based authors increased tenfold from 9 articles in 2006 to 98 in 2015" (Herciu, 2016). But Hoodbhoy, (2016) is unconvinced to this progress as he does not see on ground many of the fundamentals for such growth and terms it 'Playing the ranking game'. The studies suggest that research culture in Pakistan has seen improvement in the recent decades but this is far from ideal as the mere increase in number of research publication may not bring the desired improvement in solving the societal problems.

The literature above indicates several aspects helping foster a rich and healthy research culture. These include leadership (Bland & Ruffin, 1992), (Slade et al., 2018), (Hanover, 2014), (Kjerholt & Hølge-Hazelton, 2018), ("Fostering an effective research environment," 2017), (Rosas, 2013), (Schein, 1985), & (Marchant, 2009), culture (Farley & Deshpandé, 2004),(Dilworth-Anderson, Williams, & Gibson, 2002), (Craig & Douglas, 2006), (Deshpande & Webster, 1989), (Jan-Benedict, E.;Steenkamp, 2001), (Bhagat & McQuaid, 1982),(Shalom, H. Schwartz; Maria, 1995), (Leidner & Kayworth, 2006), ("Fostering an effective research environment," 2017), (Mapa, 2017), (Dacles et al., 2016), (Anuar & Abdul, 2013),(Agha, 2015), & (Lodhi, 2012), resources (Hanover, 2014), (Ebbutt & Ebbutt, 2006), (Marchant,

2009), & (Hill, 2002), doctoral research ("Fostering an effective research environment," 2017), (Lodhi, 2012), & (Agha, 2015), management (Deshpande & Webster, 1989), (Slade, Philip, & Morris, 2018), ("Fostering an effective research environment," 2017), (Pratt, Margaritis, & Coy, 2007), & (Marchant, 2009), collaboration (Mapa, 2017), (Hanover, 2014), ("Fostering an effective research environment," 2017), (Sarah, 2018), & (Matres, Oiva, & Tolonen, 2018), development ("Fostering an effective research environment," 2017), (Ferguson, 1999), (Hill, 2002), (Scott, Miller, & Lloyd, 2006), (Anuar & Abdul, 2013), (Lodhi, 2012), & (Agha, 2015), and Quality ("Fostering an effective research environment," 2017), (Sarah, 2018), (Notes, 2015), 2002 (Akbari & Naqvi, 2008), (Agha, 2015), & (Lodhi, 2012) etc.

4. Methods

Since the definitions of a research culture verity do not provide a standard set of variables, we shall take a few internationally used variables in our research such as leadership, resources, Doctoral Research, and Culture to ascertain evolution of research culture in Pakistan. To gauge the impact of leadership, we have taken four bench marks for leadership change i.e. 1) Till 1947 when Pakistan came into being, 2) 1948-1971 when the countries split into two separating Eat Pakistan as Bangladesh, 3) 1972-1998 when Pervez Musharraf the then Army Chief toppled the democratic government and enforced emergency, and 4) 1999-2016 the era that began after the topple. The same bench marks are used for gauging the impact of Resources in terms of increased number of universities and PhDs where number of Doctoral Research (PhDs) also serves as proxy for change in culture. In addition, our study takes into account different demographic indicators such as geographic, gender, and sector diversity along with university and supervisor ratio with respective number of PhDs produced. Although in our wider scope we used mixed methodologies using both quantitative (descriptive analysis) as well qualitative (SWOT analysis) techniques but this paper would only elaborate descriptive approach to see through various sequential stages of the research evolution in Pakistan. Whereas our first version of the study dealt with the Pakistani research culture in general (Naseem, et al., 2019), second version of the study deals with qualitative aspect (Naseem, et al., 2020), this version has special focus on Management Sciences. Hence, this study is primarily quantitative in in nature. For this purpose, it takes number of universities and PhDs output across the country, gender diversity, and contribution of private and public sectors as indicators to demonstrate evolution of research culture with contextual reference to Management Sciences. It is a broad and general picture derived from the descriptive analysis and does not deal with the in-depth qualitative analysis. Time series data start from country's inception in 1947 and comes down to 2016. Whereas gender, public, and private sectors are obvious, geographic division needs a bit explanation as follows. It is primarily divided into 7 administrative units i.e. 4 provinces i.e Balochistan, Khyber Pakhtukhwa, Punjab, and Sind along with two semiautonomous regions i.e. Azad Jammu and Kashmir (AJK) and Gilgit Baltistan. Islamabad is the federal unit comprising of capital city and adjacent areas. The Data

source is primarily HEC and respective universities' websites with a few exceptions where websites were not available or updated, phone calls were made to avail requisite data. The graphs are taken from other sources and cited accordingly while tables are based on the data retrieved from HEC and developed during the study.

5. Findings

We find that with each change in leadership, resources have increased and resultantly number of universities and Doctoral Researches have also increased. However, this change is immensely noted in the last change of leadership i.e. 1998. Similarly, these changes in leadership and resource allocation have also been impacting research culture of the country in desirable direction. At the time we fetched data, HEC website had 180 universities on the list. However, there seems a disparity in the demographic stretch as Islamabad Capital Territory despite being a single city boasts of 21 universities in sharp contrast to quite a vast spread geography of three regions i.e. Azad Jammu Kashmir, Balochistan, and Gilgit Baltistan, where we only find a meagre number of 16 universities across the area. Khyber Pakhtunkhwa, Sind, and Punjab have 33, 53, and 57 universities respectively which again shows that though Punjab has a greater number but it is far less than its share in population which is 30, 47.8, and 110 million respectively for Khyber Pakhtunkhwa, Sind, and Punjab respectively ("Population of Pakistan Census 2017 Information Report," 2017). Except Sind where private universities are in greater number than the public universities, in every other region, the latter surpass the former. See Graph 5. Considering Management PhD Producing universities, majority of universities come from public sector except Sindh that has equal share. AJK and Gilgit Baltistan have no contribution and Balochistan has only 2 public sector universities contributing Management PhDs. See Graph 6. A bird eye view over era based breakup, we find an encouraging trend in the recent years. This correlates with changes in leadership and allocation of resources for higher education, comparing with the first 5 decades, the last 2 decades have witnessed a much increased number of universities. See Graph 7. Era-based breakup of management PhDs producing universities reveals that the majority of older universities are producing management PhDs while newer universities are still settling down and may take a while to gear up. Out of 116 new universities, only 17 are on the contributing list. See Graph 8. Only 76 out of 180 are producing PhDs. Only about 1 in 3 private and 1 in 2 public universities are producing PhDs. This trend can be linked with their respective establishment dates as majority of the private universities are only recently established. See Graph 9. Similarly, all PhD producing universities are not producing management PhDs as well. About 2/3rd of these make on management PhD producing university list. See Graph 10.

Data from HEC website indicates that there are 13259 indigenous PhDs, produced by Pakistani universities. This number does not include the pending list. The picture reveals not much difference except that Islamabad has produced more than twice PhDs than KP, though it

hosts universities in much lesser number. Similarly, while Punjab and Sind have almost same in number there is a huge difference in favour of Punjab in terms of PhDs produced. Quaid e Azam University in Islamabad and relatively older universities in Punjab could be the decisive factor that have produced a larger number of PhDs in comparison to their counterparts. See Graph 11. In terms of Management PhD production, Islamabad stands taller than all followed by Punjab, Sindh, and Khyber Pakhtunkhwa respectively. Whereas Balochistan has a very meagre contribution, AJK and Gilgit Baltistan have no contribution at all. See Graph 12.

PhDs breakup in chronology indicates that the last 2 decades have been more productive than the first 7 seven decades as University of the Punjab produced first PhD in 1930. See Graph 30. The breakup in female PhDs shows more than 6 times increase in number of PhDs in the last 2 decades than all the previous PhDs that is very encouraging. See Graph 14. PhDs growth in males also boasts an encouraging trend with more than 4 times production is recorded in last 2 decades than the all previous decades. See Graph 15.

Growth trend of management PhDs reflects a huge leap of more than 20 times in the last two decades. At the time of independence, we only had two PhDs that also in economics which is an associated subject of management sciences. First ever pure management PhD appeared in the mid 1990s. Hence, management sciences appears to be a relatively recent phenomenon, in Pakistan context at least. See Graph 16. First female PhD appeared in 1990. However, it was also in economics. First ever female PhD in core management subject was produced in 2007. We have produced 136 female management PhDs so far. See Graph 17. Similarly, first ever male management PhD was produced in 1994 and 542 altogether till date. See Graph 18. Twenty six (26) out of 76 PhD producing universities are private and 50 are public sector universities. Seventy four (74) PhDs per university is the ratio considering all 180 universities. Segregation reveals that this ratio sharply declines to 8 PhDs per university in private sector universities and goes up to 102 PhDs per university in public sector. If we exclude non-PhD producing universities, ratio for overall PhD producing universities goes up from 74 to 174 PhDs per university. Similarly, ratio for private and public sector universities also goes up from 8 and 102 to 23 and 214 respectively. See Graph 19. Exploring management PhD producing universities reveals that about 1/3rd of private and about half of the public sector universities also produce management PhDs. Their overall ratio 4 management PhDs per university, 2 and 5 management PhDs per private and public sector university respectively. These figures go up for 9, 5, and 11 respectively if we exclude non-PhD producing universities. See Graph 20.

University of Karachi and University of the Punjab have produced almost 2500 and 2200 PhDs respectively that make them stand on the top and second positions respectively. University of Agriculture Faisalabad and Quaid e Azam University are next in ranks that have produced more than 1000 PhDs each followed by University of Peshawar and University of Sind producing more than 500 PhDs. Out of 13259 indigenous PhDs a huge chunk of 55 universities have produced only 1350 PhDs with an average of 24.5 PhDs per university

whereas rest of the 11909 PhDs are produced by the top 21 universities with an average of 567 PhDs each. All of these 21 universities hail from public sector and none from private sector. See Graph 21. Hamdard University, among private universities, stands on top with 96 PhDs. Next in number are Ghulam Ishaq Khan Institute of Technology with 54, Muhammad Ali Jinnah University with 51, and Qurtuba University of Science and Information Technology with 44 PhDs. See Graph 22. A major share of 7361 PhDs come from 4 universities which is more than half of the total. By including 2 other universities producing more than 500 PhDs, this ratio goes to more than 2/3rd of the total PhDs. Fifteen universities have produced more than 100 PhDs. As discussed earlier, none of these 21 universities come from private sector. Private universities appear on the scene with less than 100 universities where Hamdard University tops the list with 96 PhDs. There are 2 other private and 7 public universities that have produced more than 50 PhDs. Similarly, 11 private and 13 public universities have produced 10 or more PhDs with 21 universities producing less than 10 PhDs notwithstanding the 104 universities with no PhD output. See Graph 23.

University of Karachi again tops the list for producing the most number with 72 management PhDs. However, NUML takes over University of the Punjab with 42 management PhDs and University of Peshawar takes over University of Agriculture Faisalabad with 35 management PhDs. All top 5 universities are public sector universities again. Top 22 universities have produced 576 management PhDs while remaining 25 universities have produced 102 management PhDs. See Graph 24. Similarly, majority of management PhDs come from public sector universities. See Graph 25. National College of Business Administration and Economics stands on top among private universities with 31 management PhDs. This is followed by Foundation University, Muhammad Ali Jinnah University, and Qurtuba University of Science and Information Technology with 28, 23, and 19 management PhDs respectively. See Graph 26. Out of 47 management PhD producing universities 7 have produced 276 management PhDs. This makes more than 1/3rd of the total. Next 7 universities have produced 182 management PhDs that is almost 1/4th of the total. Collectively these 14 universities have contributed about 3/4th management PhDs. Public sector has a clear dominant role in the first four major segments while private sector comes closer to public sector in the last segment. See Graph 27.

Further segregating these 678 management PhDs we realise that 217 are from core disciplines whereas most of the PhDs i.e. 335 belong to the subject that are closely associated with management sciences but are not primarily core subjects of management sciences. Economics stands taller in these subjects with more than 260 PhDs. Since management sciences is also taught in quite a few other subjects, 126 management PhDs come from such disciplines. See Graph 28. Further scrutinising Core Management PhDs, we realise that it is a very recent emergence as the first two management PhDs appeared in mid 1990s. and all 215 PhDs from core management sciences are produced in recent years. Further private sector has

shown a strong contribution along with public sector. See Graph 29. Out of 217 core management PhDs, 34 are females and all have been produced in the last two decades. See Graph 30. Similarly, 183 management PhDs are males in this total of 217 core management PhDs and apart from 2, rest of all have been produced in the last two decades. See Graph 31.

Similarly, exploring the supervisor to PhDs ratio, we find that there are 100 supervisors that have produced 10 or more PhDs each. Dr. Atta Ur Rehman tops the list with over 50 PhDs. Further, 360 supervisors have contributed with 5 or more PhDs each. Furthermore, 223 supervisors stand with 4 PhDs under their name while 448 and 1030 Supervisors are tagged with 3 and 2 PhDs respectively. A huge number of 4060 supervisors could only contribute 1 PhD each. See Graph 32. Dr. Abuzar Wajidi from University of Karachi is the only supervisor who has produced 10 management PhDs. It is obvious that majority of the supervisors have produced less than 5 PhDs, and only a few supervisors stand with 5 or more PhDs. See Graph 33. This chart does not count a reasonable majority of the faculty who have produced no PhD far.

6. Conclusion

One prominent conclusion that we can draw from the study is that last major change in the leadership about two decades back has been a turning point where at least tremendous numerical improvement has been seen in almost all aspects of the research whether it was increase in resources, number of universities or number of indigenous PhDs. Leadership change in 1999 in terms of government and in 2002 the transformation of University Grants Commission into Higher Education Commission can clearly take this credit and the result confirms literature (Bland & Ruffin, 1992), (Pratt, Margaritis, & Coy, 2007), (Marchant, 2009) that leadership is an important ingredient in cultivating research culture. However, this improvement has resulted primarily from a few older and public universities and is not evenly distributed over geographic or sectorial stretch. Hence, room for enormous improvement is still there and much needed contribution from universities with recent establishment dates and private sector would certainly add to the research cultural depth. Similarly, there is much room for many public sector universities that need to become at par with the leading universities. This would surely add to the evolution of the research culture. Similarly, there is a huge geographical stretch that has very limited set of educational resources and facilities. A policy initiative based on equity may bring benefits to the whole society for sure. Benefits for gender equity have also well recorded. Stronger contribution from private universities would definitely play a catalyst role in this evolution in the years to come. Last but not the least, more efficient supervision is expected to add to the improvement. However, in nutshell, the recent trends are encouraging and we anticipate their continuity and more improvement.

6.1 Limitations and Future Course of Action

Current study only focused on number of universities and PhDs as indicators of evolution of the research culture based on the leadership and resource allocation benchmarks. The study does not explore characteristics of the respective leaderships. Further, the study also does not cater for political atmosphere of the country in terms of its priorities regarding education. Hence future research could incorporate such indicators as well. Similarly, any future study could do a comparative study of indigenous and foreign PhDs as HEC has awarded a huge number of foreign scholarships for PhD programs and many of them have returned and joined different institutes. There are also many jobless PhDs and we need to explore the possible reasons for this bleak scenario. Future research, among others, can also study PhDs produced and their respective publications and citations. We also need to explore the quality of Pakistani journals and their comparison with the foreign journals in respective fields. Though this paper presents quantitative outlook, qualitative aspects need also exploration. This also remains unanswered whether this improvement results from change in leadership or resources alone or it results from combination of the both.

References

Agha, N. (2015, November 15). Research culture in Pakistan_ The 'undisclosed' moral decadence - DAWN. *The Dawn*. Retrieved from https://www.dawn.com/news/1218751/research-culture-in-pakistan-the-undisclosed-moral-decadence

Anuar, M., & Abdul, B. (2013). Understanding of Research Culture Levels : A Review of Literature, (i), 120–125.

Bhagat, R. S., & McQuaid, S. J. (1982). Role of subjective culture in organizations: A review and directions for future research. *Journal of Applied Psychology*. https://doi.org/10.1037/0021-9010.67.5.653

Bland, C. J., & Ruffin, M. T. (1992). Characteristics of a productive research environment: literature review. *Academic Medicine : Journal of the Association of American Medical Colleges*. Retrieved from http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=1596337&retmode=ref&cmd=prlinks%0Apapers3://publication/uuid/14DE9A14-395A-4D26-AD32-B5E6D64E3E6B

Chakaraborty, S. (2017). Creating a culture of research in India - The Hindu Business Line.

Craig, C. S., & Douglas, S. P. (2006). Beyond national culture: Implications of cultural dynamics for consumer research. *International Marketing Review*, *23*(3), 322–342. https://doi.org/10.1108/02651330610670479

Dacles, D. D. M., Valtoribio, D. C., Yolanda, F., Rosario, G. Del, Matias, C. A., & Saludarez, M. U. (2016). Cultivating Research Culture : An Analysis of Contributing Factors , the Institution ' s Research Initiatives , and Collaboration among the HEI ' s Trifocal Functions, *4*(6), 439–449. https://doi.org/10.12691/education-4-6-2

Deshpande, R., & Webster, F. E. (1989). Organizational Culture and Marketing: Defining the Research Agenda. *Journal of Marketing*, *53*(1), 3. https://doi.org/10.2307/1251521

Dilworth-Anderson, P., Williams, I. C., & Gibson, B. E. (2002). Issues of Race, Ethnicity, and Culture in Caregiving Research. *The Gerontologist*, *42*(2), 237–272. https://doi.org/10.1093/geront/42.2.237

Ebbutt, D., & Ebbutt, D. (2006). The development of a research culture in secondary schools a Research Culture in Secondary Schools, *0792*. https://doi.org/10.1080/09650790200200171

Evans, L. (2009). Developing research capacity in the social sciences: a professionality based model. *International Journal for Researcher Development*, *1*(2), 134–149. https://doi.org/10.1108/1759751x201100010

Farley, J. U., & Deshpandé, R. (2004). Organizational culture, market orientation, innovativeness, and firm performance: an international research odyssey. *International Journal of Research in Marketing*. https://doi.org/10.1016/j.ijresmar.2003.04.002

Ferguson, P. B. (1999). Developing a Research Culture in a Polytechnic :

Fostering an effective research environment. (2017). The University of Sheffield. Retrieved from https://www.sheffield.ac.uk/rs/ethicsandintegrity/research-environment/research_environment

Hanover. (2014). Building a Culture of Research: Recommended Practices. *Hanover Research*, (May), 1–33. Retrieved from http://www.hanoverresearch.com/media/Building-a-Culture-of-Research-Recommended-Practices.pdf

Herciu, L. (2016). Pakistan: Another Bric in the Wall. Retrieved from http://ip-science.interest.thomsonreuters.com/incites-pakistan/

Hill, R. (1999). Revisiting the term "research culture." *Higher Education Research and Development (HERD)*, (July), 12–15.

Hill, R. (2002). Establishing and sustaining a Research Culture. https://doi.org/10.1073/pnas.1112965109

Hoodbhoy, P. (2016). Playing the Rankings Game in Pakistan _ The World View.

Jan-Benedict, E.;Steenkamp, M. (2001). The role of national culture in international marketing. *International Marketing Review*, *18*(1), 30–44.

Kessels, J. W. M., & Keursten, P. (2002). Creating a knowledge productive work environment. *Lline, Lifelong Learning in Europe*, *VII*(2), 104–112.

Kjerholt, M., & Hølge-Hazelton, B. (2018). Cultivating a culture of research in nursing through a journal club for leaders: A pilot study. *Journal of Nursing Management*, *26*(1), 42–49. https://doi.org/10.1111/jonm.12518

Leidner, & Kayworth. (2006). Review: A Review of Culture in Information Systems Research:

Toward a Theory of Information Technology Culture Conflict. *MIS Quarterly*. https://doi.org/10.2307/25148735

Lodhi, A. S. (2012). A pilot study of researching the research culture in Pakistani public universities: The academics' perspective. *Procedia - Social and Behavioral Sciences*, *31*(2011), 473–479. https://doi.org/10.1016/j.sbspro.2011.12.089

Mapa, D. S. (2017). Research Culture in the Philippines, 1–4.

Marchant, T. (2009). Developing Research Culture Overcoming Regional and Historical Obstacles. *Professional Doctorate Research in Australia: Commentary and Case Studies from Business, Education and Indigenous Studies*, 55–64. https://doi.org/10.1080/00220620.2012.659948

Matres, I., Oiva, M., & Tolonen, M. (2018). In Between Research Cultures – The State of Digital Humanities in Finland. *Informaatiotutkimus*, *37*(2). https://doi.org/10.23978/inf.71160

Mendez, E. H., & Cruz, M. del R. R. (2014). Research culture in higher education: the case of a foreign language department in Mexico. *PROFILE: Issues in Teachers' Professional Development*, *16*(2), 135. https://doi.org/10.15446/profile.v16n2.40819

Notes, L. (2015). The culture of research in the UK, (November), 1–9.

Pratt, M., Margaritis, D., & Coy, D. (2007). Developing a Research Culture in a University Faculty. *Journal of Higher Education Policy and Management*, *21*(1), 43–55. https://doi.org/10.1080/1360080990210104

Rosas, N. L. (2013). Strengthening Research Culture in Higher Education. *SGS Research Journal*, 5–22.

Salazar-Clemeña, R. M., & Almonte-Acosta, S. A. (2007). Competition, Cooperation and Change in the Academic Profession: Shaping Higher Education's Contribution to Knowledge and Research; Developing research culture in Philippine higher education institutions: perspectives of university faculty; 2007, (September).

Sarah, C. (2018). Transforming research culture – Policy Postings_ UCL Public Policy Blog – Medium. University College London.

Schein, E. H. (1997). Schein's Organizational Culture & Leadership.

Scott, S., Miller, F., & Lloyd, K. (2006). Doing fieldwork in development geography: Research culture and research spaces in Vietnam. *Geographical Research*, *44*(1), 28–40. https://doi.org/10.1111/j.1745-5871.2006.00358.x

Shalom, H. Schwartz; Maria, R. (1995). Values in the West: A Theoretical and Empirical Challenge to the Individualism-Collectivism Cultural Dimension. *World Psycology*, 91–122.

Shaukat, A. (2012, December 9). 10 years of HEC_ A revolution in education or misplaced

priorities_ _ The Express Tribune. *The Tribune*. Retrieved from https://tribune.com.pk/story/477192/10-years-of-hec-a-revolution-in-education-or-misplaced-priorities/

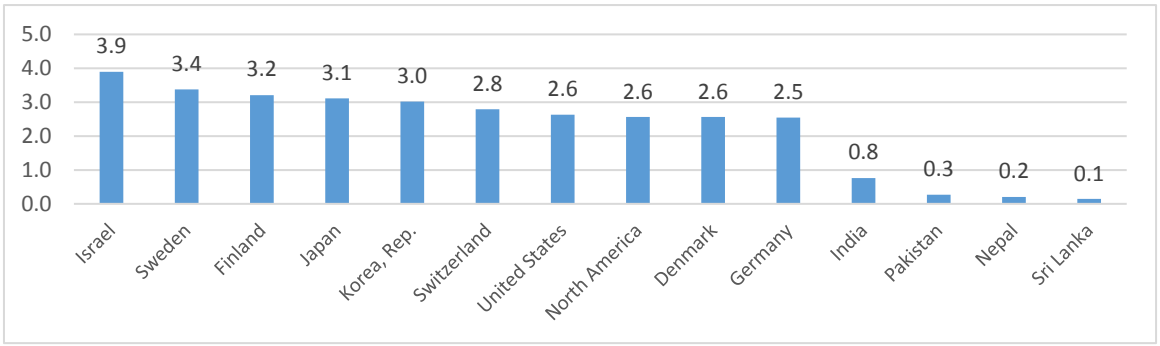
Shi, Y., & Rao, Y. (2010). China's research culture. *Science*, *329*(5996), 1128. https://doi.org/10.1126/science.1196916

Slade, S. C., Philip, K., & Morris, M. E. (2018). Frameworks for embedding a research culture in allied health practice : a rapid review, 1–15.

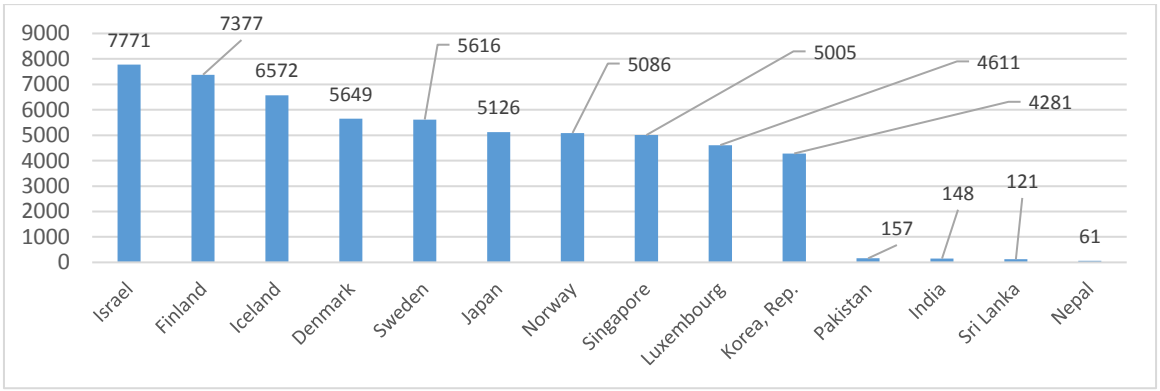
Studman, C. (2003). Growing a Research Culture. *Journal of Research Administration*, *34*(1), 19. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=9609684&site=ehost-live

Teehankee, B. (n.d.). *Philippine Higher Education : A Systems Action Research Approach*.

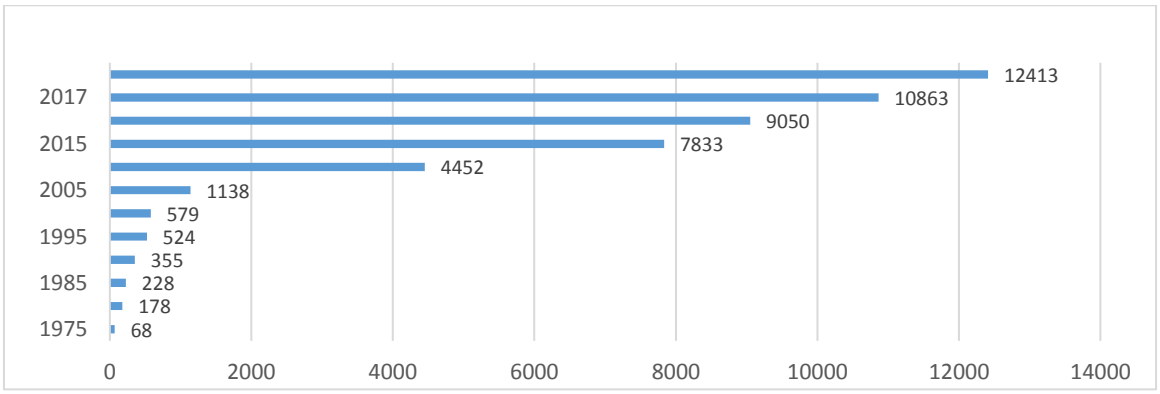
VandenBos, G., Humphreys, M., Karlan, D., Yarkoni, T., Dafoe, A., Alter, G., … Contestabile, M. (2015). Promoting an open research culture. *Science*, *348*(6242), 1422–1425. https://doi.org/10.1126/science.aab2374



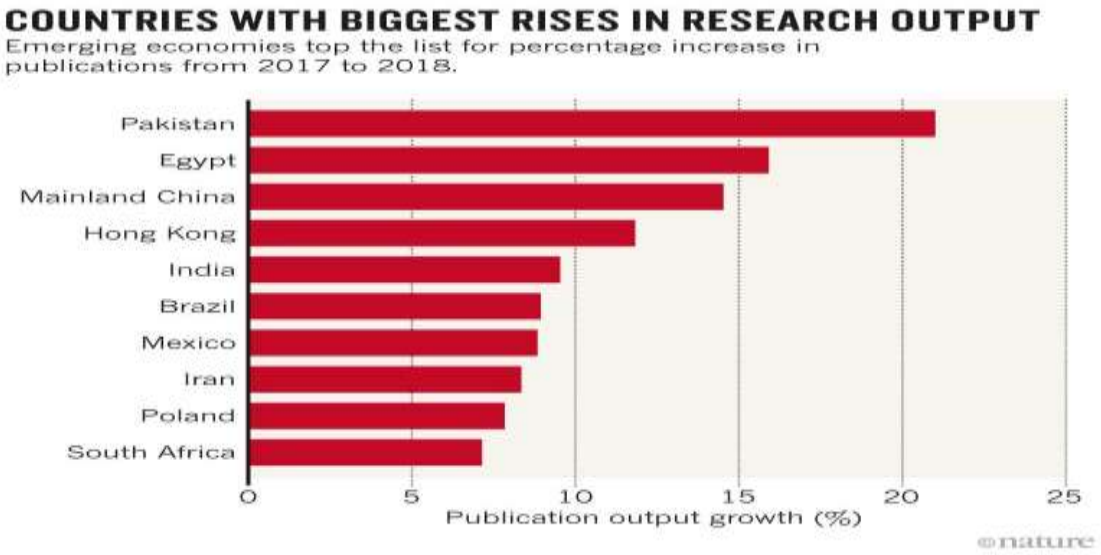
Graph 1: Average of 23 years' R&D Expenditure (% of GDP) 1996-2018,



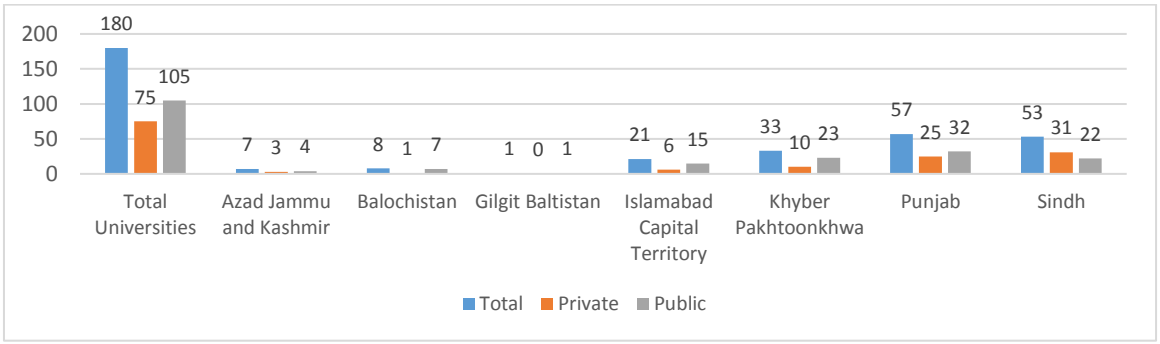
Graph 2: Average of 23 years' Researchers in R&D/million people:1996-18, (WDI 2019)



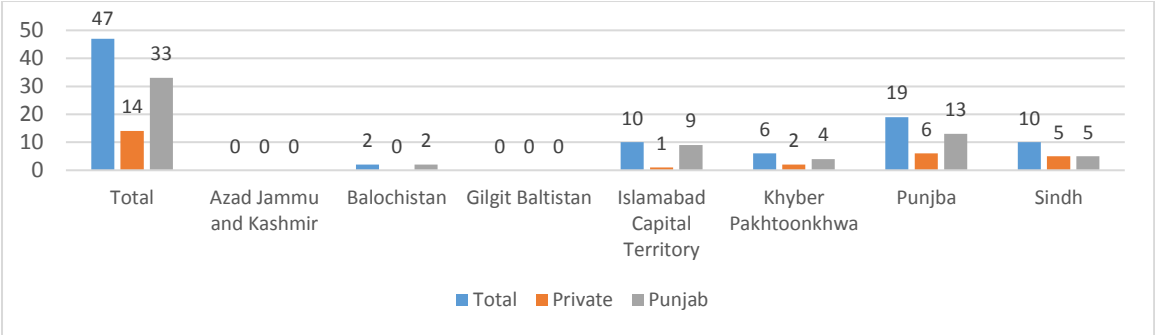
Graph 3: IF Articles Published from Pakistan Over the Years, (WDI 2019)



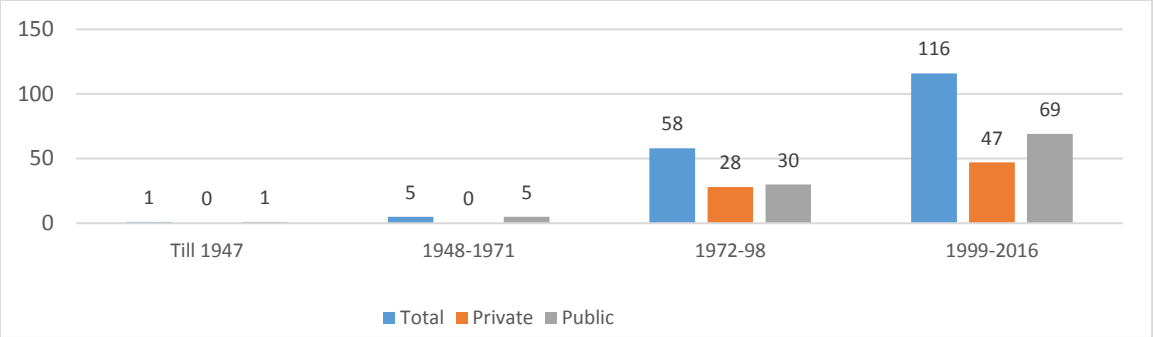
Graph 4, Source: Web of Science Analysis: ISI, Clarivate Analytics



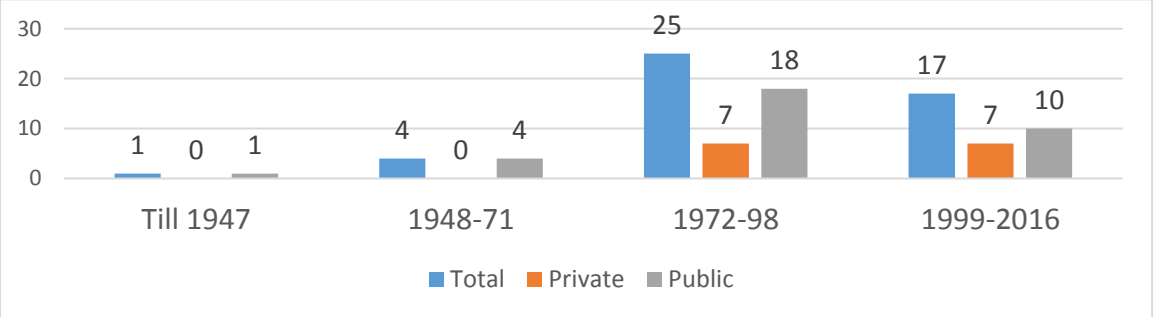
Graph 5: Breakup of HEC Recognized Universities in Pakistan



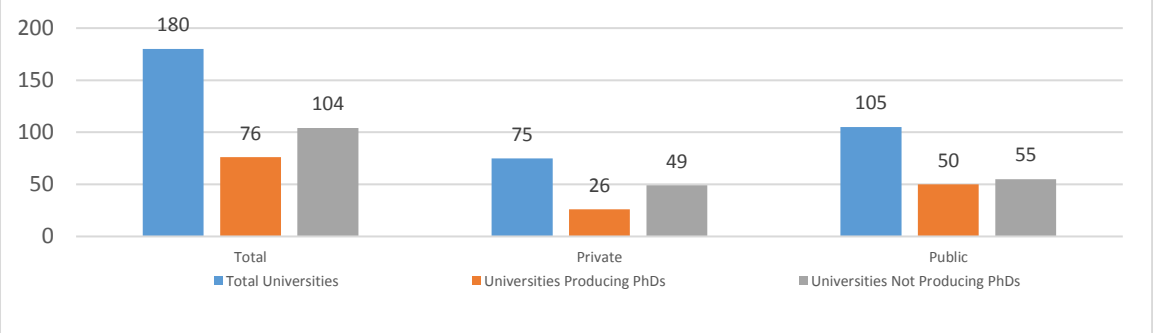
Graph 6: Breakup of Management Sciences PhD Producing Universities



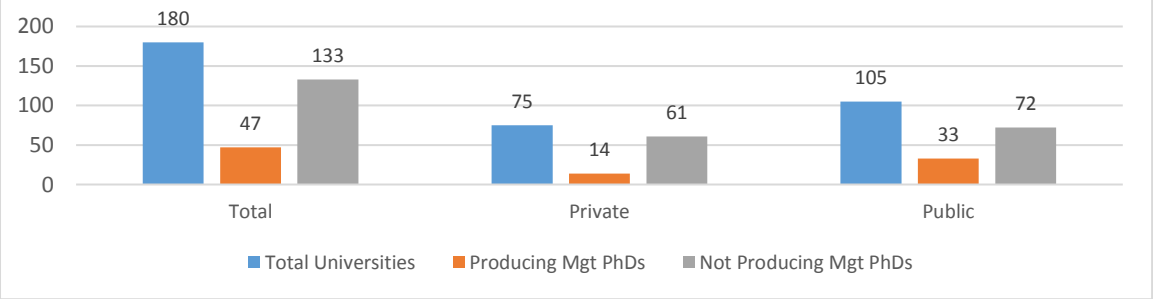
Graph 7: Era-Wise Breakup of 180 Universities



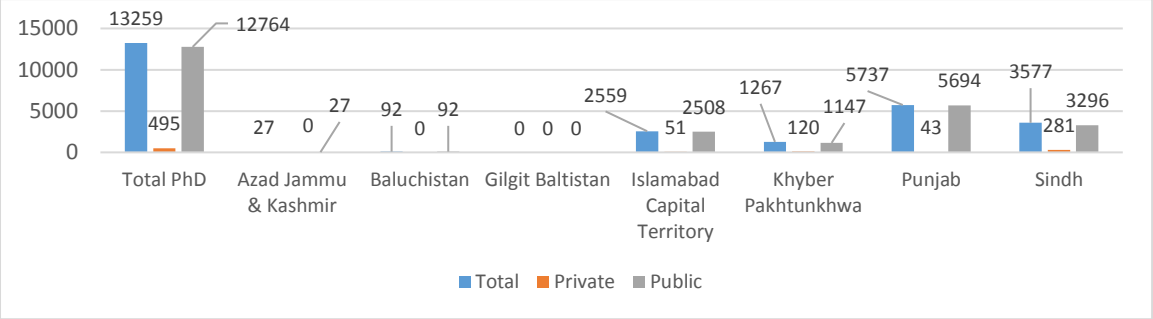
Graph 8: Era-wise Breakup of 47 Management Sciences PhDs Producing Universities



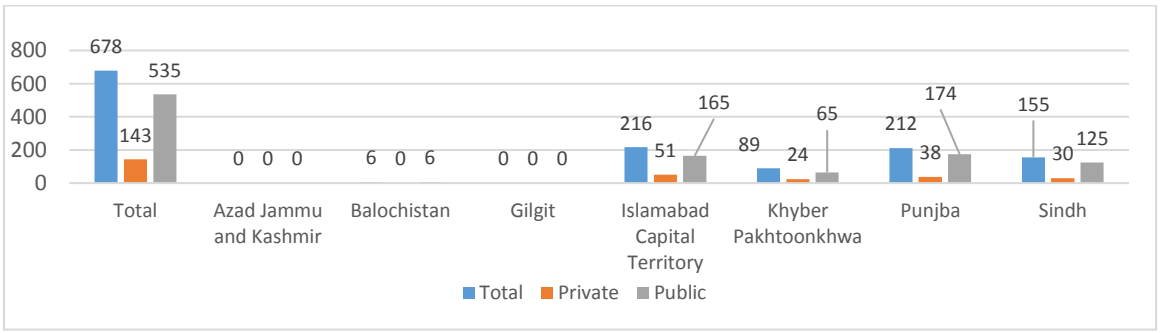
Graph 9: Breakup of Universities with and without PhD Output



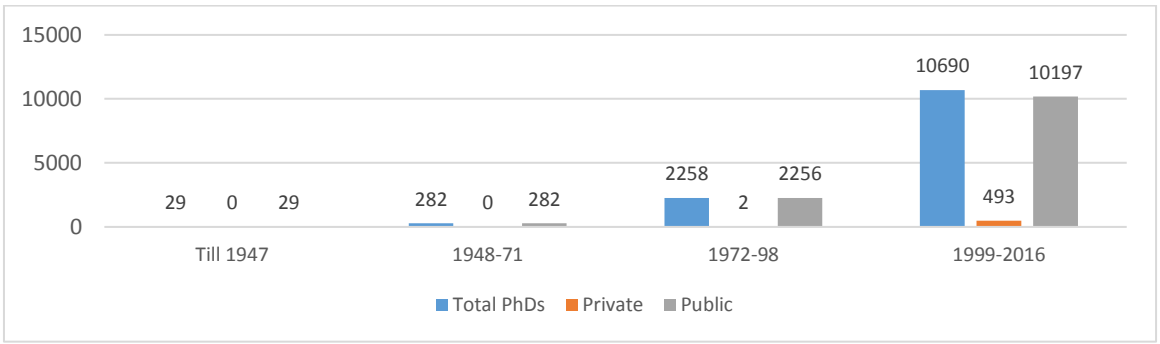
Graph 10: Breakup of Universities with and without Producing Management Sciences PhDs



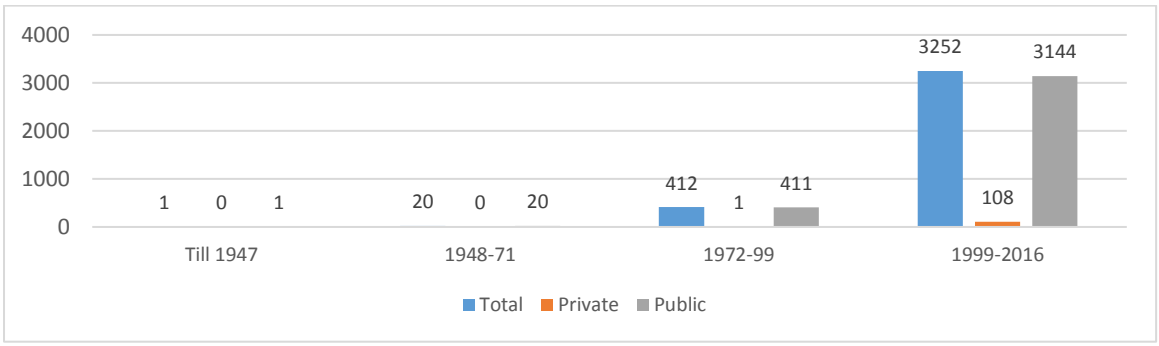
Graph 11: Region wise Breakup of Total PhDs



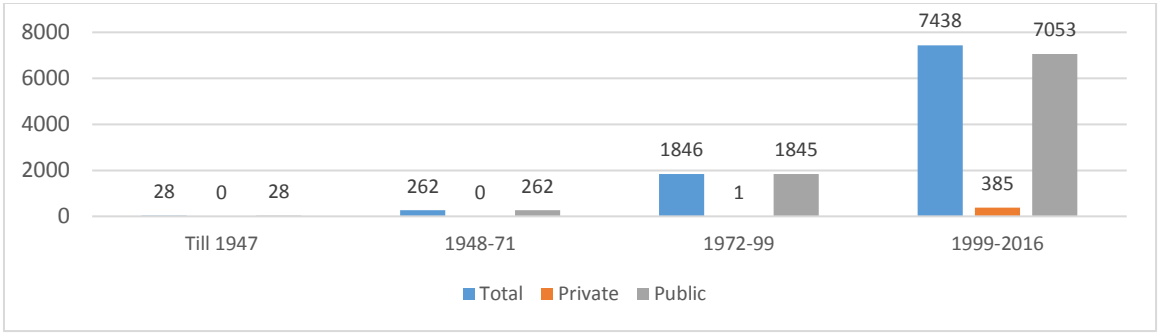
Graph 12: Region-wise Breakup of Management Sciences PhDs



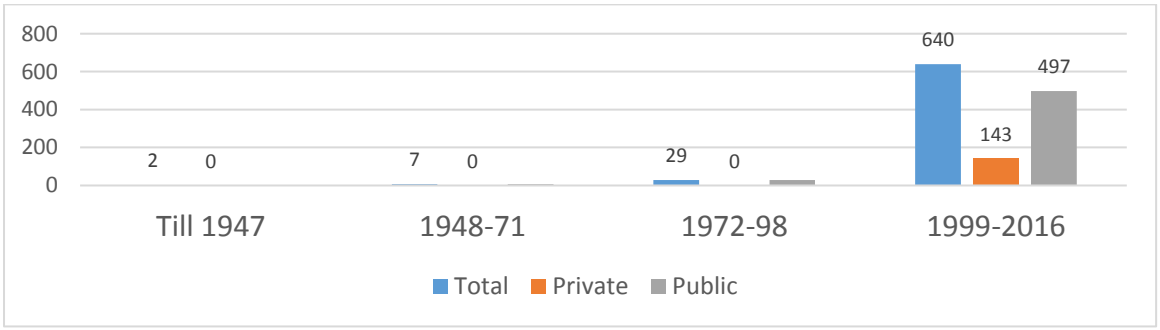
Graph 13: Era-wise Distribution of 13259 PhDs



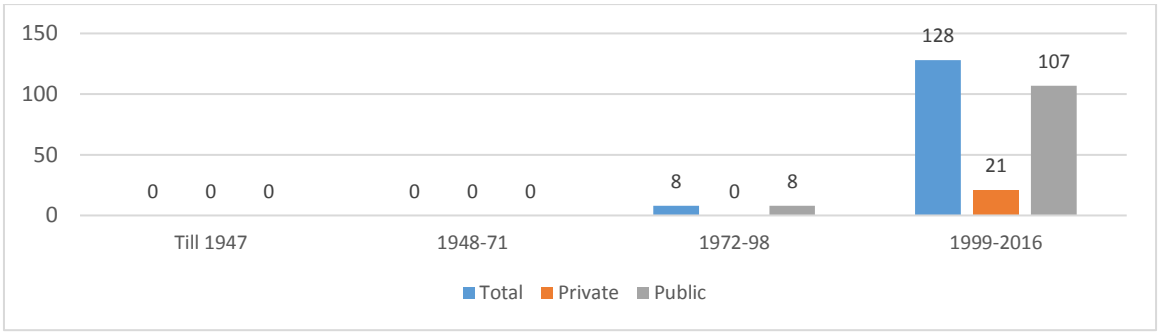
Graph 14: Era-wise Distribution of 3685 Female PhDs



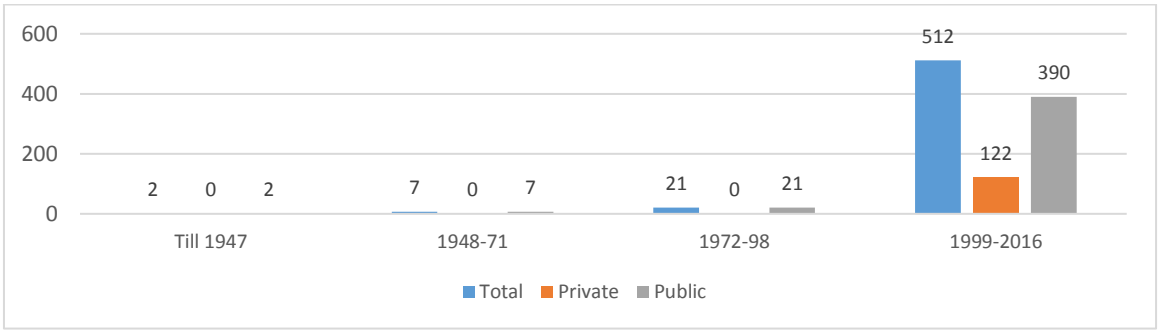
Graph 15: Era-wise Distribution of 9574 Male PhDs



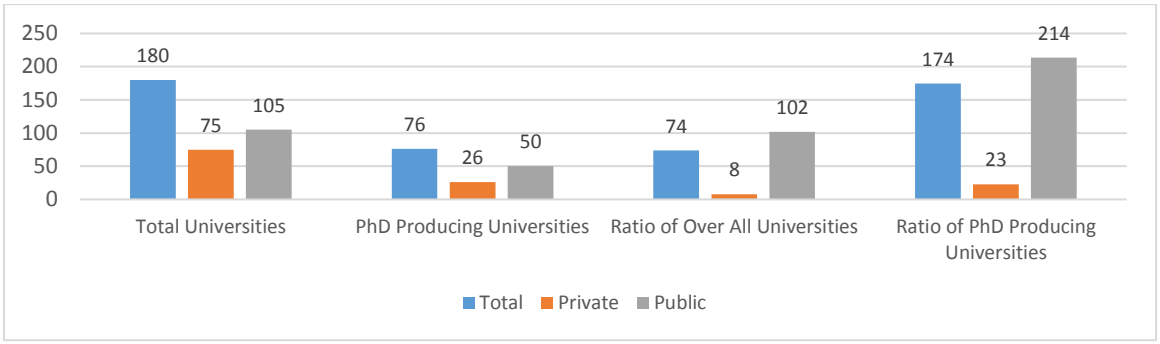
Graph 16: Era-wise Distribution of 678 Management Sciences PhDs



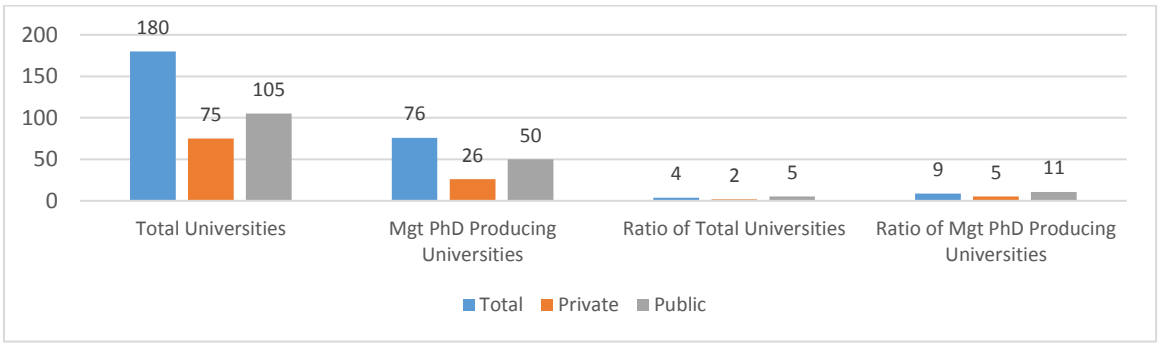
Graph 17: Era-wise Distribution of 136 Female Management Sciences PhDs



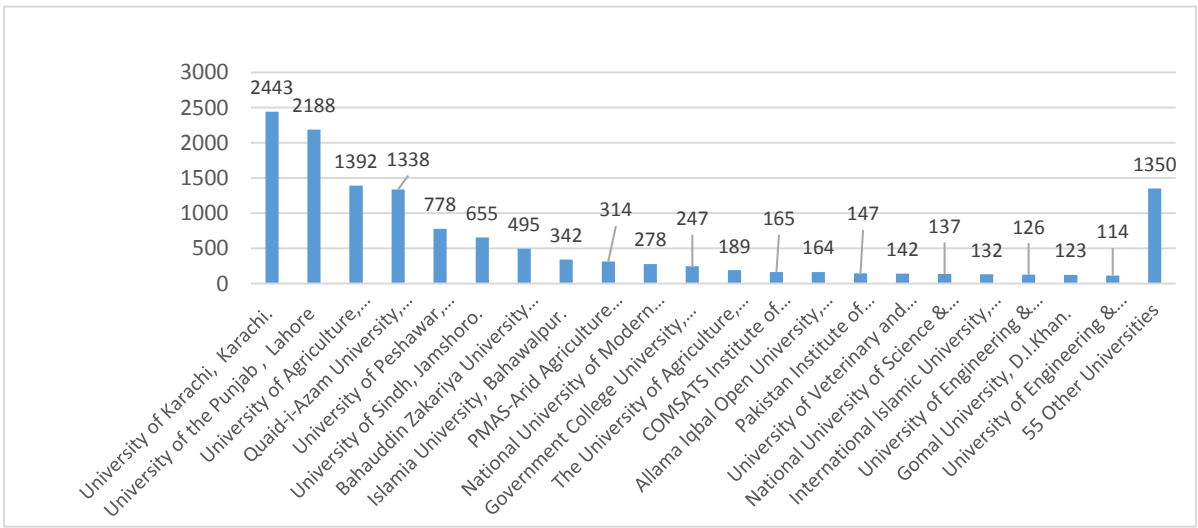
Graph 18: Era-wise Distribution of 542 Male Management Sciences PhDs



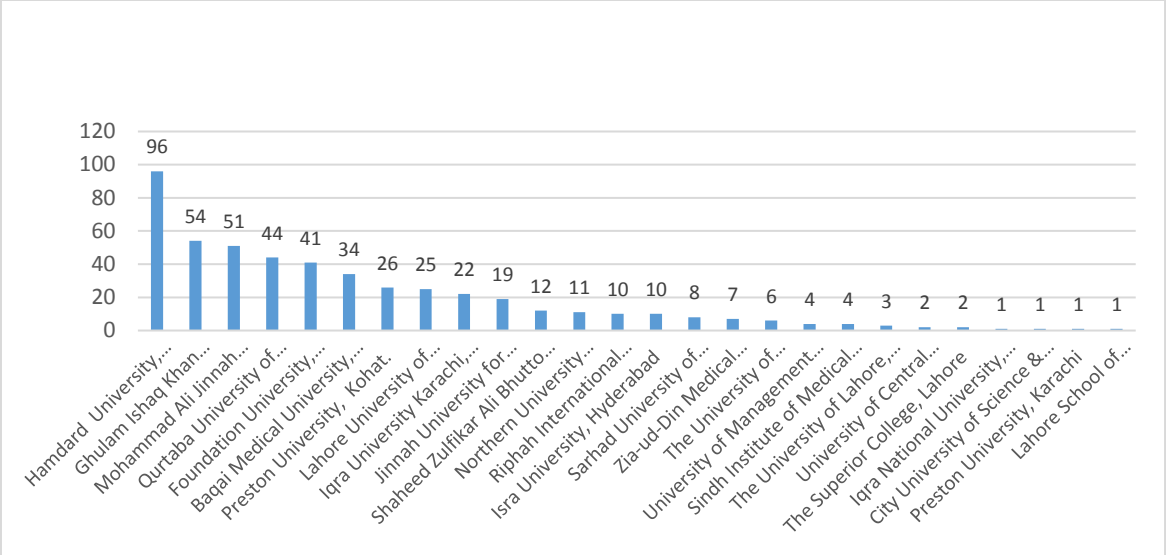
Graph 19: Public Private Ratio of University PhDs



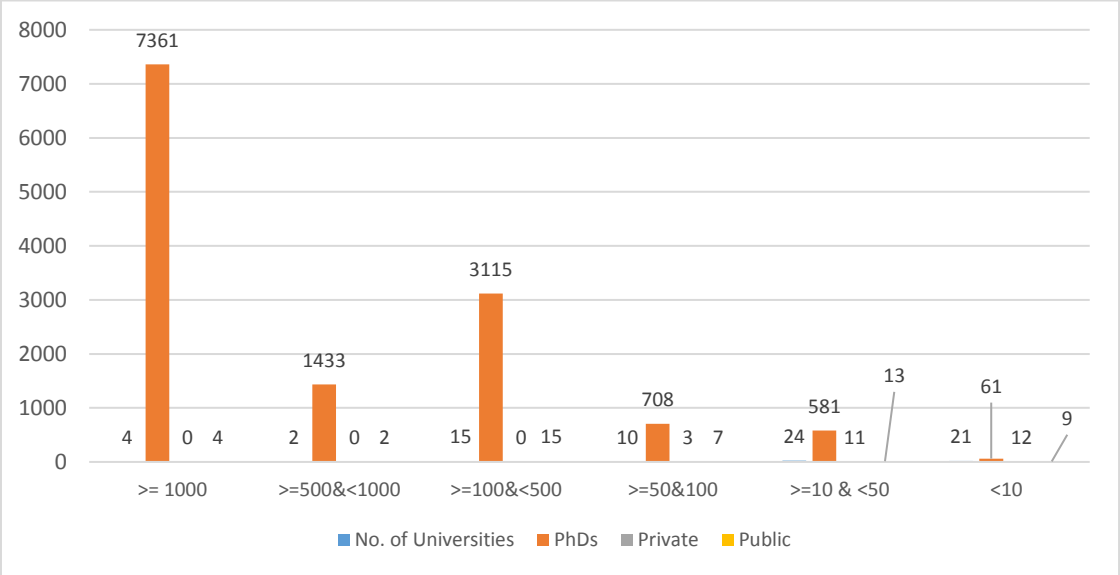
Graph 20: Ratio of University to Management Sciences PhDs



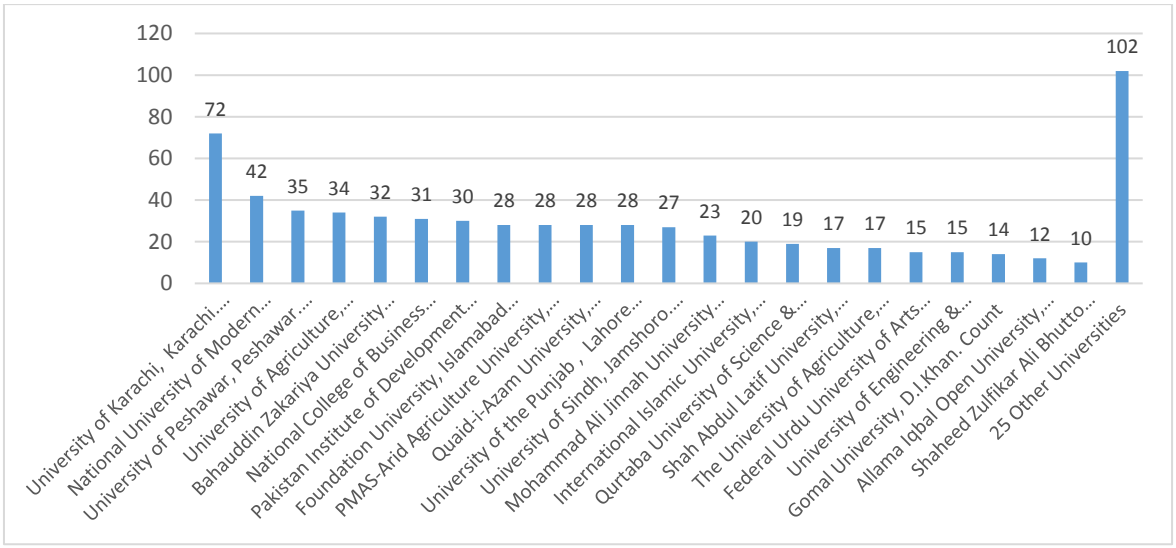
Graph 21: 13259 PhDs Produced by 76 Universities



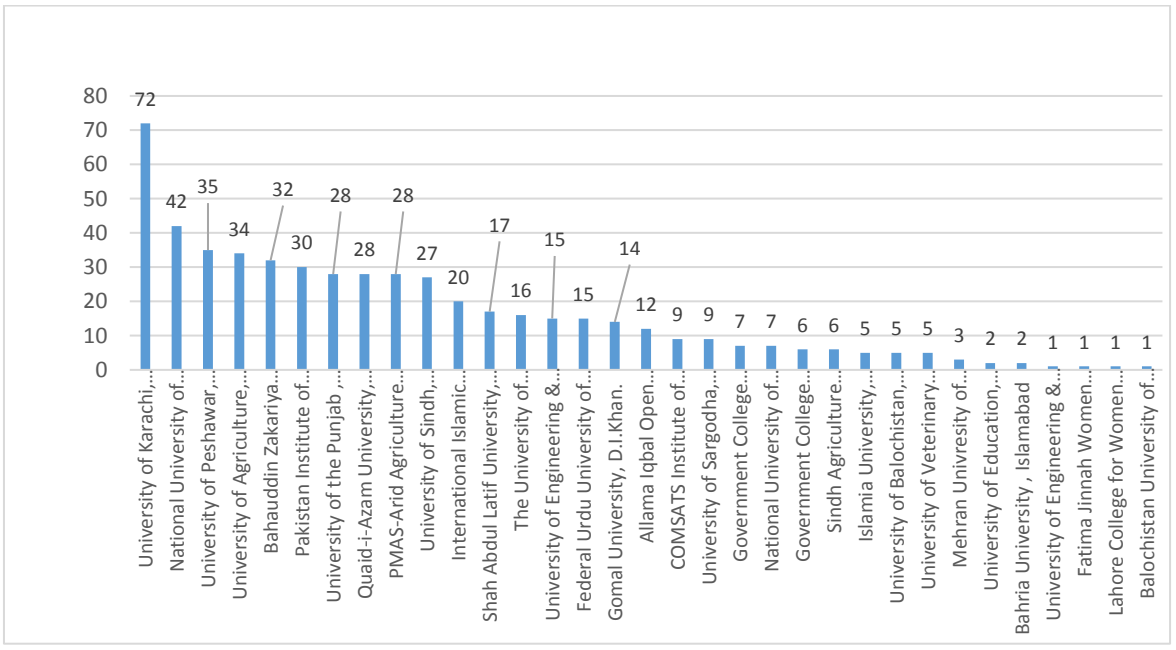
Graph 22: 495 PhDs Produced by 26 Private Universities



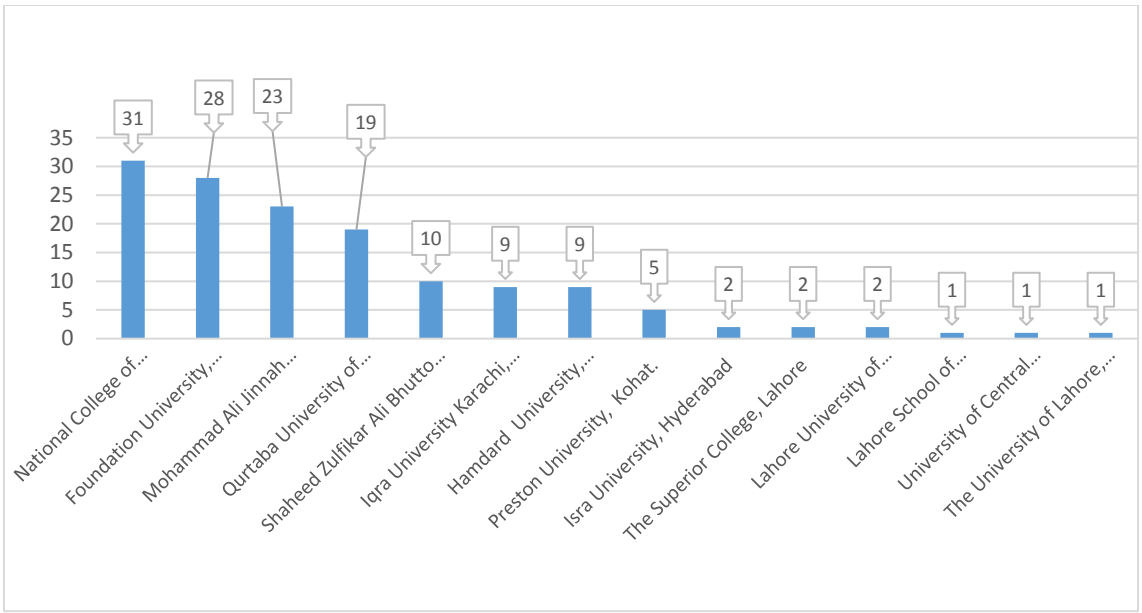
Graph 23: Major Segments of Universities with Number of PhDs



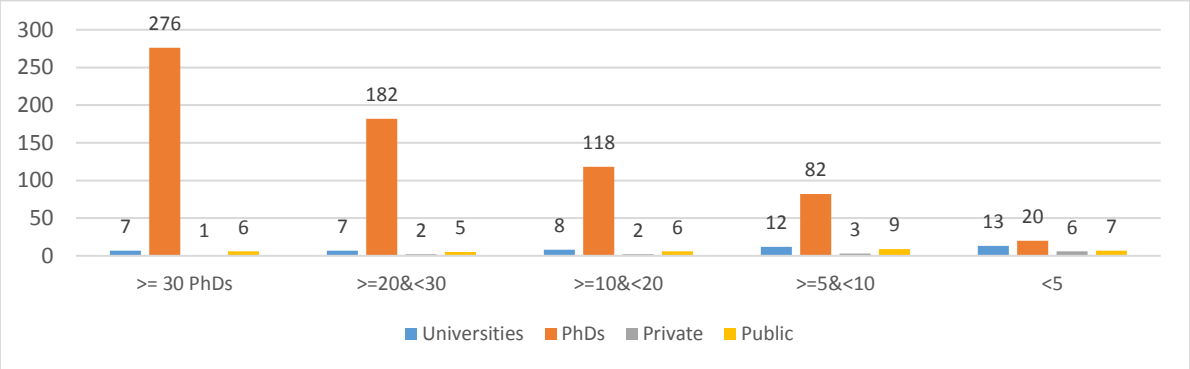
Graph 24: Distribution of 678 Management Sciences PhDs by 47 Universities



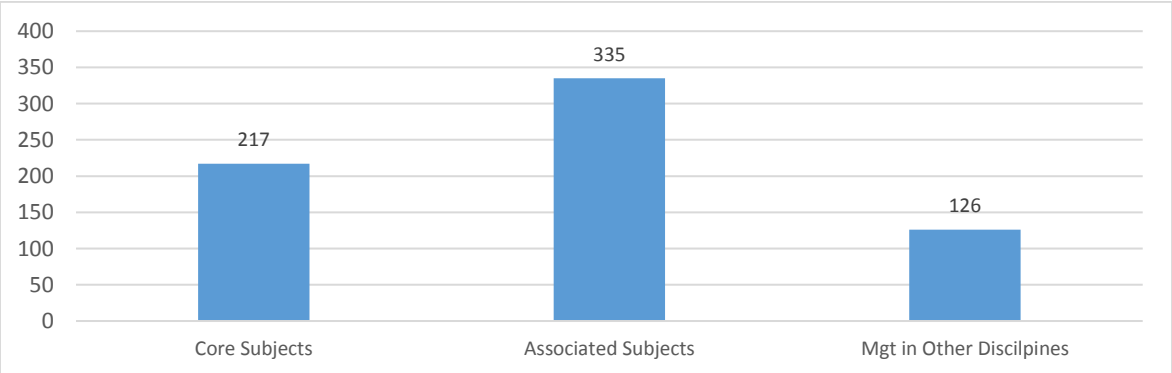
Graph 25: Distribution of 535 Management Sciences PhDs by 33 Public Universities



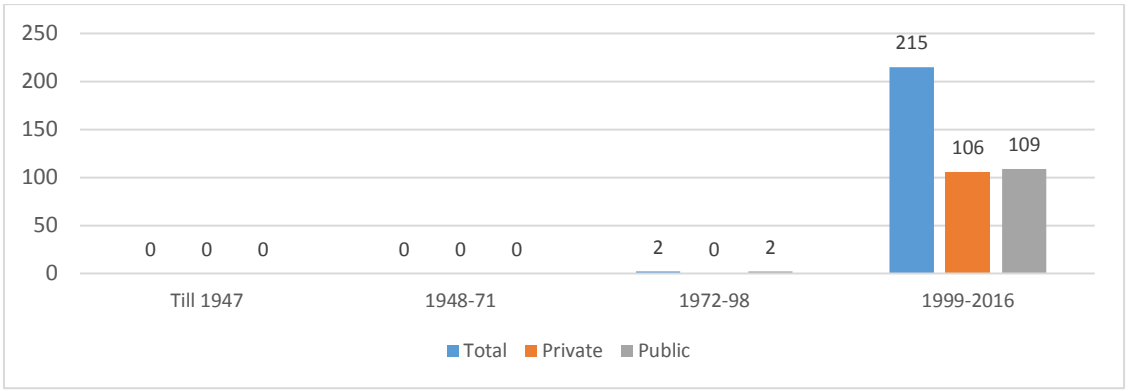
Graph 26: Distribution of 143 Management Sciences PhDs by 14 Private Universities



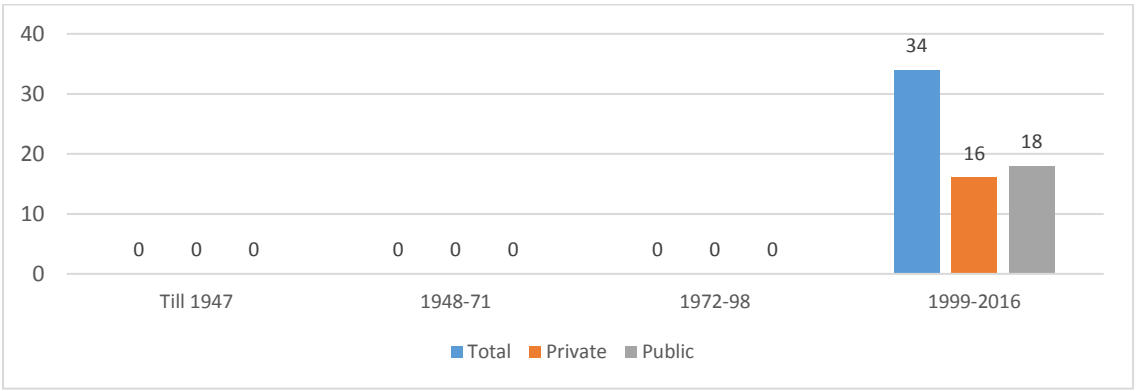
Graph 27: Major Segment of Management Sciences PhD Producing Universities



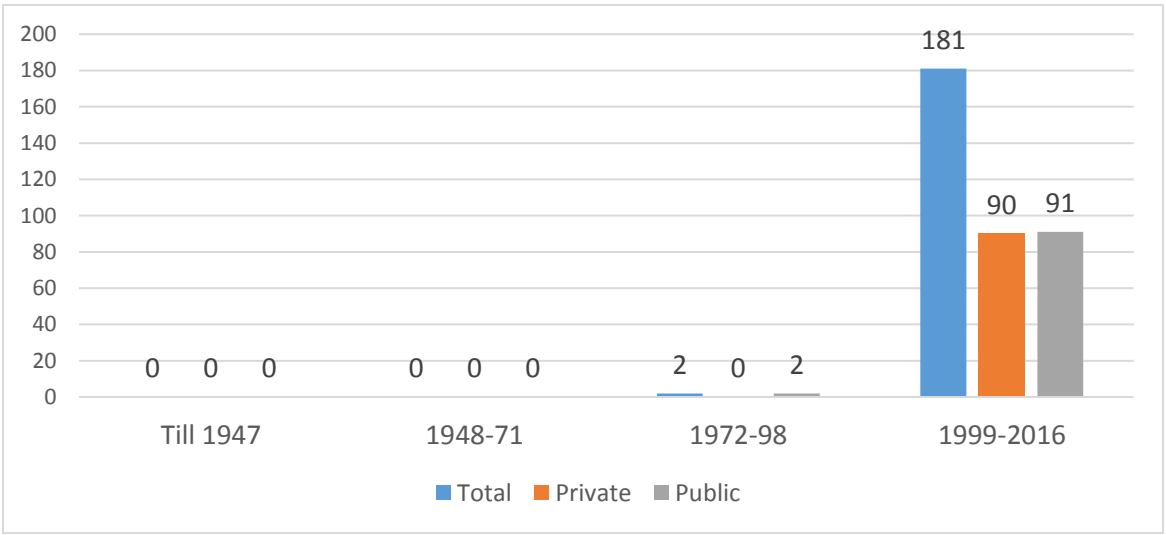
Graph 28: Distribution of 678 Management Sciences PhDs in Subject Relevancy



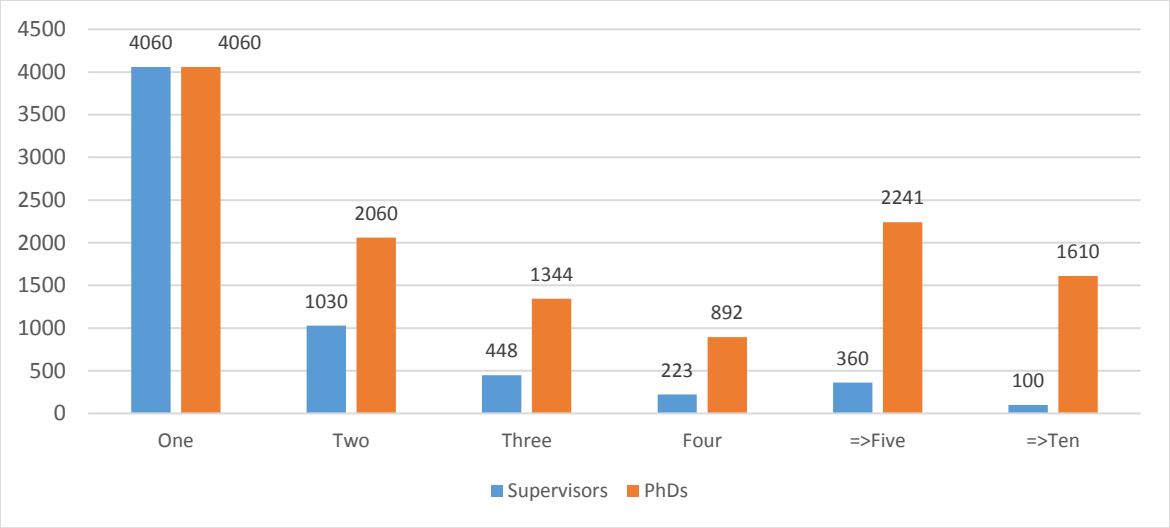
Graph 29: Distribution of Core Management Sciences PhDs



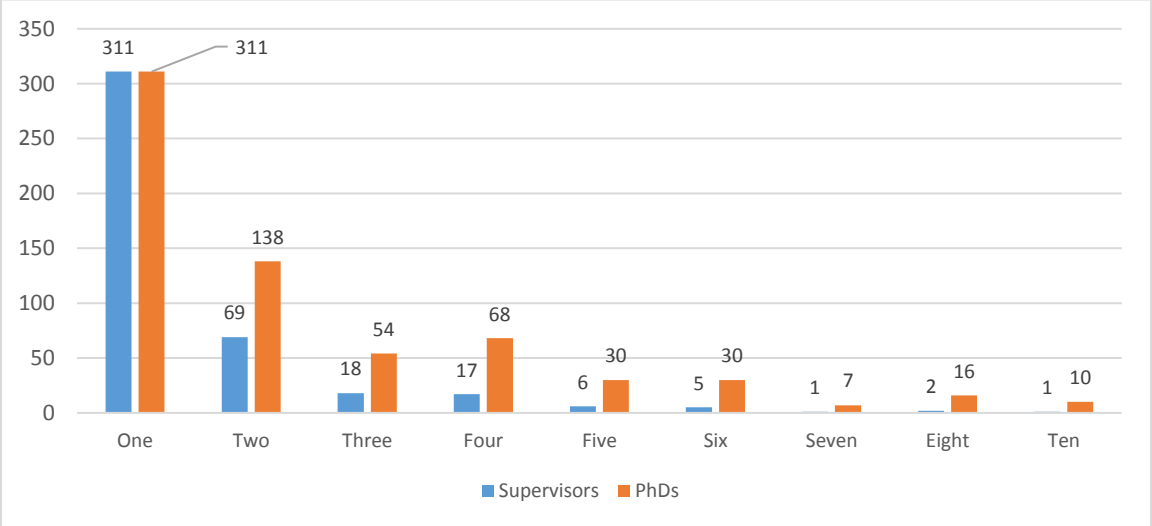
Graph 30: Distribution of 34 Female Core Management Sciences PhDs



Graph 31: Distribution of 183 Male Core Management Sciences PhDs



Graph 32: Number of Supervisors with Number of PhDs



Graph 33: Number of Supervisors with Number of Management Sciences PhDs