



RESEARCH PAPER

The Effect of Brain Drain on the Economic Growth of Developing Countries: Evidence from Pakistan

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ABSTRACT

The escalating trend of brain drain in developing countries like Pakistan necessitates urgent attention from political leadership to avert potential impediments to national development. Objective of study is to explore the root causes, consequences, and ramifications of brain drain on Pakistan's economic trajectory. This research employs a mixed-methods approach, integrating qualitative and quantitative practices. While, data analysis is carried by employing the ordinary least squares (OLS) technique to evaluate relevant data and trends. The results reveal a negative correlation between brain drain and economic progress, highlighting the challenges posed by talent migration to sustainable development. Notably, the study also revealed an inverse correlation between brain drain, remittances, and economic advancement, while highlighting a positive linkage between human capital augmentation and economic prosperity within the Pakistani context. Drawing from these insights, the study recommends for targeted policy interventions, mitigating adverse effects of brain drain on Pakistan's economic landscape.

Keywords: Brain Drain, Economic Development, Economy, Emigration, National Development

Introduction:

Brain drains, often referred to as human capital flight, is a widespread and significant phenomenon that involves the transfer of highly skilled and talented persons from one country or region to another, usually in search of improved opportunities or conditions (Bongers, Díaz-Roldán, & Torres, 2021). The transmission of intellectual wealth has substantial consequences for both the countries from which it originates and the countries to which it is transferred, significantly influencing their economic, social, and cultural environments. The explanations endorsing brain drain are many and linked by a wide array of interconnected factors. Highly intelligent persons often seek higher salaries, better job prospects, and enhanced quality of life in the countries where they plan to live. Therefore, economic opportunities play a crucial role in their decision-making process. The adoption towards migration is formed through a varied choice of socio-political conditions, all of which contribute to the decision-making process (Huddleston & Scholten, 2022). This category encompasses difficulties such as unemployment instability, insufficient infrastructure, and limited availability of top-notch education and healthcare. Moreover, the pursuit of research and academic institutions equipped with state-of-the-art equipment and ample financial resources frequently entices academics and professionals, intensifying the problem of brain drain from emerging countries.

The term "Brain Drain" was coined by the British Royal Society to describe the recognition of a notable pattern of migration (Bhardwaj & Sharma, 2023). The word was originally used to characterize the migration of engineers, professionals, physicians, and scientists from the United Kingdom to the United States of America. However, it has since expanded to include a wider range of qualified individuals moving from underdeveloped countries to more developed nations. The historical backdrop of brain drains, emphasising

its initial recognition as an issue that impacted industrialized nations (Feld, 2021, p. 24). Nevertheless, the idea has grown increasingly important in conversations about developing nations, where the departure of highly trained individuals has emerged as a significant issue affecting economic growth, innovation, and societal advancement. Moreover, the term describes the situation in which a considerable number of well-educated and skilled persons move from their native country to another nation that offers better financial and employment conditions. Furthermore, the individuals who possess extraordinary abilities or have attained high levels of education are more likely to relocate to developed countries where their knowledge is highly valued. The promotion of such mobility is mostly influenced by regulations and institutional pressures, as most countries choose to prioritize the immigration of individuals with advanced training and education, rather than those who do not possess such qualifications. The global aspect of brain drain is highlighted by this historical context, since it affects countries of all economic development levels and goes beyond geographical bounds. This serves as a reminder of how talent migration and the intricate dynamics that influence the transfer of knowledge, economic competitiveness, and sustainability of human capital are all interconnected in a world that is becoming more and more interconnected.

The apprehension aimed brain-drain has developed over austere during modern day history, thus, posturing a substantial apprehension aimed at evolving nations internationally, together with Pakistan. According to the Bureau of Emigration and Overseas work (BEOE), a remarkable 862,625 Pakistanis sought employment abroad in 2023, whereas over 165,457 migrations during the first quarter of 2024 (BEOE, 2024). This figure represents the second largest number during last decade since 2014, behind 946,571 in 2015, while well ahead of 839,353 in 2016, and 832,339 in 2022 on record (Zafar, 2023). Moreover, among 862625 total emigrants during 2023, there were 22760 highly qualified, while over 45687 highly skilled emigrants, also highlighted in Figure-1, to simplify complex evidence and draw unassuming comparison (BEOE, 2024).

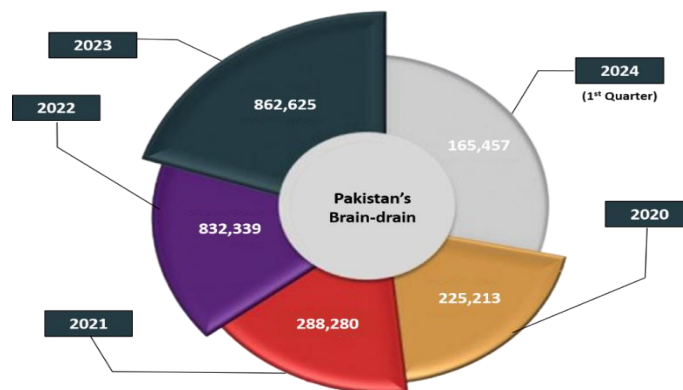


Figure-1: Pakistan's Brain-drain State, Last Five Years (Source: BEOE, 2024)

Therefore, Pakistan, a nation with a relatively low economic status, offers a distinct chance to examine the problem of brain drain, which is defined by rapid expansion and variety. This analysis can provide useful insights to migration experts in comprehending the various aspects associated with the migration of highly skilled individuals, the repercussions on the country, the effects on those who remain, and the policy actions implemented to maximize advantages for all parties concerned. The emigration of highly qualified professionals and experts from developing regions to more developed countries have resulted in a conspicuous shortage of specialized knowledge and experience within local companies and institutions (Ushakov, 2019, p. 6). The diminution in dexterities is not only a matter of numbers; it carries substantial repercussions that deeply affect the economy, society, and education. The main repercussion of brain drain is predominantly observed in the realms of economic growth and creativity. Skilled workers often choose

environments that offer higher pay, opportunities for advancement, and better working circumstances. As a result, emerging countries like Pakistan face the obstacle of reducing their intellectual resources, which impedes advancements in technology, research and development initiatives, and overall productivity in crucial sectors of the economy (Sehar, Mushafiq, Arif, & Rafiq, 2021, p. 68).

Moreover, the departure of persons with considerable training gives rise to significant worries regarding the sustainability of human capital growth in the long run. Lack of competence not only hampers the efficient dissemination of knowledge within local organizations but also impedes the advancement of developing sectors that heavily rely on trained labour. The absence of personnel possessing advanced training can lead to shortcomings in critical areas of expertise, hindering the country's ability to compete on a global scale and promote local innovation (Sumarni & Kadarwati, 2020, p. 13). Furthermore, the prevalence of brain drain has broader implications for achieving national development goals. As a result, it is imperative for governments and stakeholders to reassess their approaches in order to retain skilled individuals, improve their abilities, and adequately prepare for the future workforce. Therefore, the purpose is dual: (1) recollect vastly trained workers; and (2) substitute a favorable setting that inspires their evolution, to make substantial contributions towards the development of the state.

Radonjic and Bobic published a paper in 2020 that discusses brain drain in the context of globalization and sustainability. They explain that *essentially, the consequences of brain drain extend beyond the simple departure of highly educated individuals* (Radonjic & Bobic, 2020, p. 6). Brain drains affects research institutions, educational systems, and opportunities for future generations and emerges as a persistent problem for developmental and evolutionary phase of the society. To overcome this, a comprehensive strategy is needed, including targeted policies, investments in education and innovation, and strategic partnerships to create a favorable environment for knowledge foundation and utilization in developing countries like Pakistan. The aim of this research paper is to understand the factors contributing to brain drain and its consequences focusing on developing countries as of Pakistan. The investigation of this study is to identify the factors that influence the decision-making process of capable individuals and impact of consequences of migration by skilled individuals on the countries like Pakistan as a specific instance. In this context, the consequences include reduction in human resources, reduced creativity and output and hindrances in getting hold of sustainable development goals.

Moreover, this study enhances the argument on brain drain by referring the valuable understanding into conceivable methods to reduce the negative effects of brain drain. The outcomes are primarily based on theoretical contexts and pragmatic analysis. As of practical implications, this study provides direction to government organizations, decision-makers and worldwide organizations on designing efficient strategies to tackle the problems of brain outflow and prepare the expertise of expatriate populations for making sustainable development. The concept of this paper is to provide thoughtful and pragmatic debates, formulates rules and regulations and encourage collective efforts to get maximum use of human capabilities for wide-ranging and enduring development of under-developed country like Pakistan especially in relation with global migration and drive of the potential human resource.

Literature Review

Developing countries like Pakistan have been heavily affected by brain drain, as such countries undergo a significant loss and outflow of highly skilled individuals and experts to more developed and advanced nations, leaving behind hindrances and incompetence in their economic growth (Tahir, Kauser, & Ali, 2011, p. 304). Despite having a considerable pool of highly skilled individuals, Pakistan has witnessed a notable depletion of outstanding talent, particularly in vibrant industrial sectors such as healthcare, engineering, information

technology and education. Movement of potential persons not only affects the overall strength of bright minds of the country but also elevates apprehensions about its long-term economic sustainability and capability in the fields of innovation and competitions worldwide. The foremost aim of this research is to carry out assessment of the impact of brain leakage on the economic growth of Pakistan through presenting a substantive information and knowledge.

Brain-drain, often recognized as relocation of well-trained labour besides qualified professionals connecting one state to other, thus, remained a concern of research, more particularly related to its influence over developing nations (Chand, Satish, 2008). Such concerns have motives of persuasion for encouraging professional opportunity improved economic conditions and worth modern standards of daily hot however the particular phenomena can foster positive as well as the negative implications for both States including the source country to the host country the reason could be the impacts and effects on either state towards social political and social economic concerns however these impacts and results are linked to circumstances and conditions motivating such growth in either state (Krasulja, Blagojević, & Radojević, 2016, p. 132).

Although, there has been concerns over the persuasions towards either state however Pakistan faces major brain drain and comparatively less focus research has been observed in this field further more few studies have highlighted the impacts of brain drain including flow of professionals as well as the move of skilled people towards other states concerning affecting health information technology and engineering sectors result and d Pakistan facing critical shortage of skilled and professional deficiency in these fields even though a saves remittance inter in return

Moreover, the other impact on imported research gap being highlighted during literature review includes the concern of availability of comprehensive data that could help in making desired analysis and offering recommendations for future conscience further more lack of adequate policy addressing talent Hunt and offering space to settle inland also poses are challenge and has lack of literature on the aspect any addition fluctuating AIMS and policy making behaviour also missing link in this research. The objective of this paper is to assess and analyze the momentum and ratio of brain outflow (brain drain) from Pakistan and its adverse consequences on the overall country's economic growth and development. The foremost objective is emphasized on thorough understanding of effects of brain drain outflow on economic growth of Pakistan and put forth the effective policy solutions and way forward to resolve economic challenges threatened by brain drain.

Material and Methods

This research paper conducted an in-depth analysis of the complex issues encompassing the subject of brain drain (cerebral outflow). It discovered the root causes of the potential outflow, evaluated its far-reaching consequence and examined its significant impact on economic growth of Pakistan. This research employs a mixed-methods approach, integrating qualitative and quantitative practices. Qualitatively, content analysis was employed to find out the reasons and root causes enabling brain-drain in Pakistan. Whereas, quantitative analysis involves evaluating brain-drain impact assessments to discern patterns, correlations, and indices of influence over economic growth in Pakistan. Moreover, it also identified the factors which caused the outflow of brain drain from Pakistan, including limited employment opportunities at home, political and economic instability and attractive specialized employment and educational opportunities abroad. Data analysis was carried out by employing the ordinary least squares (OLS) technique to evaluate relevant data and trends. By using the robust Ordinary Least Squares (OLS) method, the study analyzed relevant data to identify underlying patterns (Ngoma & Ismail, 2013, p. 213). Thus, carrying out intensive analysis, this research examined true and critical perspective of reduction of human capital, as it is quite clear that Pakistan has lost valuable treasure in shape of highly

skilled persons and experts working in multiple fields (Abu-Rashed & Slottje, 2018, p. 358). The repercussions of this loss encompass beyond the minute financial standards and has greatly influenced the capability of Pakistan in the domains of innovation, productivity, competitive and sustainable economy. In this intellectual investigation, the broader concerns of brain drainage of extraordinarily professionals have been emphasized in respect with economic growth and development of Pakistan. Subsequently, educationists, policy handlers and other concerned groups who are relevant of brain seepage and its outcomes on economy of developing countries like Pakistan will be equipped significantly with real perspectives and conceptual understanding of brain seepage.

Discussion: Brain-Drain Phenomena & Trend

The political and economic disturbances in Pakistan gives rise to progression of brain outflow and mostly high potential individuals leave the country to abroad where they feel politically and economically more secured and safer environment for their future prospects (Shah, Rana, & Ayoub, 2023, p. 344). Hence, they establish themselves in foreign countries and exploit their potential and professional knowledge in a befitting manner. Pakistan, instability at executive level which further characterized by corruption, governance challenges, civil unrest, and frequent changes of governments. In fact, this hinders professionals' progression and growth in their careers. It is further added that job security, economic growth and external entrepreneurship have been affected by political instability in Pakistan, which creates discomfort among the highly talented people and compels them to migrate to advance nations for seeking their future prospects and livelihood (Azizullah & Mughal, 2024).

Uncertainty in job employment, reduced purchasing power of the people, currency fall, price hike situations and monetary disruptions are the outcomes of economic unpredictability in Pakistan and so these issues get worsened and severe. In Pakistan, professional and highly skilled pool of individuals face little chances of career growth and advancement, less facilitations in support of their educational and training facilities, low incentives and compensations for innovation and entrepreneurship due to unstable circumstances of economy ((Haq, 2019). As a result of such problems in the country, highly skilled individuals seek emigrational options to a more favorable country: more economic stability, increased job prospects and high earning options for their professional development. It is further added that political and economic unsteadiness severely attacks on vital and potential areas like hospitalization, academia, information technology and research. Therefore, talented lot of Pakistan is most likely to confront challenges as a result of fiscal constraints, monitoring ambiguities and inadequate assistance. Resultantly, they start seeking opportunities and job options anywhere or any place which could enable them to effectively utilize their potential, access to advanced technologies and provide their valuable participations into modernized and innovative ventures (Sajjad, 2023, pp. 31-55). (Figure-2)

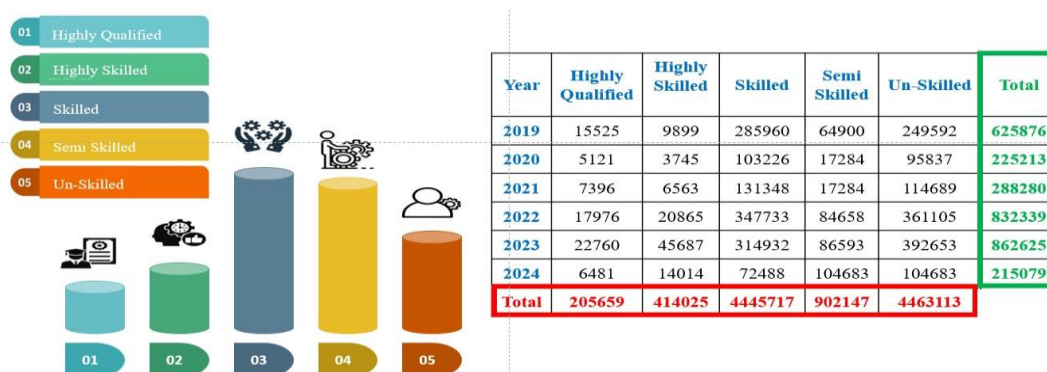


Figure-2: Pakistan's Brain-drain State, Last Five Years (Source: BEOE, 2024)

In Pakistan, less job options and opportunities are multi-layered issue which is highly troublesome to skilled professionals and those experts who are working in various industrial sectors (Arif, Ejaz, & Yousaf, 2017, p. 88). Such scenario has a complicated interaction among labor markets, prospects of career development and larger economic background. All these issues have greater impact on the future and career growth of highly skilled persons in Pakistan. Slow employment growth, industry-oriented pressures, dichotomy between educational experiences and job requirements and insufficient organizational structures are the issues which revolve around brain outflow in Pakistan. As for job market is concerned, it always seems to be struggling to contest with increasing strength of professional graduates and ultimately causing supply and demand disproportion in various regions of Pakistan. Hence, graduates with advanced and skillful education confront with problems in finding job placements which would have compatibility with their goals, expertise and objectives. Furthermore, insufficient infra, technical limitations and lack of digitized infrastructure and overwhelming difficulties regarding transport infrastructure and urban extension are the tragic aspects which pose hurdles to innovation and economic development of Pakistan. Undeveloped infrastructure of road network and trend of urbanization expansion have serious impacts on travelling routes, causing obstacles and hindrance to job market, especially in countryside areas (Farooq & Ahmad, 2017, p. 56).

Motivational Influences for Brain Seepage

The problems of brain outflow are further aggravated by drop and decline in field of education in Pakistan. This phenomenon compels the highly skilled pool of individuals to move abroad as they see limited opportunities for their restoration. The following paragraphs are proffered for investigation of the issue (Altaf, Kalsoom, & Ali, 2015).

Firstly, Pakistan confronts with complications and problems in the maintenance of arduous educational value at all levels which include primary and higher educational domains. The corrosion of educational standards is mainly characterized by deficient approach in harnessing of faculty staff with modern methodology of teaching, outdated curricula, insufficient infrastructure and partial resources in field of education. Asking of question negatively by the students greatly impacts the performance level of his education, critical thinking approach and readiness of the students for their future engagement and prospects (Arif, Ejaz, & Yousaf, 2017).

Secondly, the phenomenon of Brain circulation Dynamics works on the migration of highly skilled professionals among various countries which including the concept of brain gain (circulation and return of professional talent) and brain outflow (not returning of professional talent). There are various challenges and critical factors, being confronted by Pakistan, which include insufficient job opportunities, poor acknowledgement of foreign credentials, governmental obstacles and socio-economic issues. Such obstacles and weaknesses in the educational system of Pakistan deter skilled professionals from getting back to land of Pakistan and putting efforts in the considerable contribution for growth and development of their country (Farooq & Ahmad, 2017).

Thirdly, the phenomenon had led deterioration and decline in the spheres of innovation and socio-economic development in Pakistan. Those skilled and talented individuals of Pakistan who possess extraordinary abilities in the fields of research, economy and new enterprises confront with problems and challenges for retention and restoration into academic and professional domains. So, it hinders the capacity of Pakistan to harness the talent and expertise of diaspora population. It is quite obvious that it impedes Pakistan's ability to harness the expertise and competencies of its diasporic population, foster the development of innovative environments and ultimately attain sustainable economic growth through knowledge-driven sectors. To address these challenges, Pakistan needs to focus on improving educational standards, creating opportunities for highly skilled

individuals, and streamlining the process for their reintegration into the country's academic and professional spheres.

Repercussions of Brain Outflow from Pakistan

Migration of skilled and talented individuals from Pakistan has paramount impact on the progress, economy and society of the country with socio-economic effects being the primary concern (Laila & Fiaz, 2018, p. 549). The professional people who departure from Pakistan often come from fortunate backgrounds or possess some resources to maintain their support of migration, perpetuating the disparities between the wealthy and the less fortunate. The departure of exceptionally professional people also leads to a loss of ambition and talent, as they seek better opportunities abroad due to a lack of their career perks including recognition and compensation in Pakistan. The relocation of highly skilled individuals to other countries widens the income inequality gap, aggravates the social divide, reduces opportunities for the less fortunate, depletes the country's talent pool, limits local innovation, robs communities of role models and impedes the advancement in significant departments of the country (Arif, Ejaz, & Yousaf, 2017).

Overall, brain drain and social service strain have far-reaching consequences for Pakistan's public services, economic development, and social cohesion. For instance, the exodus of potential individuals leave from the fields of educational institutions, public health or welfare and public administration will weaken the availability of amenities, reduces the excellence of public facilities and ultimately breaches the trust and confidence in government sectors. These occurrences are primarily particularly affecting the countryside and sidelined sections of the society, where pool of skilled force is already insufficient. The menace of brain drain also disorders family affiliations and cares, triggering sensational and fiscal problems (Altaf, Kalsoom, & Ali, 2015, p. 53).

Consequently, such phenomenon creates a "Brain Drain Cycle" when families start motivating their members to go abroad and earn livelihood for them (Winters & Baldwin, 2007, p. 262). So, this promotes cycle of continuation and ongoing exodus of the skilled individuals and aggravates for socio-economic alterations. It is further added that this aspect of brain drains significantly modules the dynamics of investment of Pakistan and economic flexibility. The exodus and evacuation of highly capable individuals are likely to discourage overseas investment, disturbance leadership chain, and reduce capacity for innovation. Eventually, it has great impacts and implications in job creation, economic development in various industrial sectors and denial of Pakistan as a favorable place for economic growth and investment opportunities.

Results:

Through findings of this paper on the issue of brain outflow, complicated and intricate environment is exposed, which is highly influenced by a complex network of economic, social, and demographic features. It is further added that the research provides a comprehensive analysis of brain drain in Pakistan, including an assessment of current policies and measures aimed at mitigating the issue. The findings highlight potential deficiencies, limitations and opportunities for policy enhancement. Based on the research analysis, results offer to include policy reforms for facilitation to professionals, incentives to retain talented individuals, investments in education and innovation fields, support and guidelines for entrepreneurship ecosystems, holding a wide range of appointments with the diaspora and making of environments which encourage skilled persons to participate in the progress of their country, Pakistan. By considering specific challenges of Pakistan and potential in the context of global brain drain trends, valuable insights and input contents can be gained. This comparative viewpoint can be utilized to obtain planned decisions which may efficiently tackle the problems of brain outflow. Overall, the research findings offer a

comprehensive and inclusive understanding the issues of brain drain in Pakistan and also provides a foundation for creation of policies and initiatives to address this critical issue.

Conclusion

To conclude, while the issue of brain outflow enables the readers to comprehend various perspectives of its significant challenges, it also presents an opportunity for Pakistan to reassess its strategies, prioritize investing in human resource and create a future avenues where highly skilled professionals choose to stay and contribute to growth and prosperity of their country. By leveraging its human capital in an efficient manner, Pakistan can plan a more promising course for its people and the nation as a whole. The brain drain phenomenon in Pakistan is a multifaceted issue influenced by various parameters across economic, political, social, and educational fields.

In this analytical piece of document, the aspects which tend to motivate highly skilled individuals for ensuring their career and grasp their wide range of opportunities and solutions have been fully comprehended. Further, far-reaching consequences of brain outflow are highlighted on various sectors which include strength of invention, human resources and social dynamic forces. At a nutshell, a concerted efforts of all stakeholders including civil society, educational institutions, and organizations of public and corporate sectors are required for implementation of aforementioned recommendations to drive considerable renovation and change in the existing system of Pakistan. In sequence of collaboration at one platform can produce avenues of opportunities, remove hurdles in the way of progress and help promotion for holding of talented persons. By adopting this strategy, Pakistan being a developing country will be able to establish a strong foothold for expansion of sustainable economic progress and prosperity on its land.

Recommendations

Based on the substantial investigation of brain drain particular in Pakistan, the following recommendations have emerged as crucial strategies /way forward to address the issue, retain highly skilled individuals and promote viable social and economic development in the country. Thus, allocation of resources to elevate education standards across all tiers (primary to tertiary) is required to be emphasized. Such steps or initiatives include infrastructure improvements, curriculum updates in conformity with industry standards, incessant teacher professional training and development and digital learning platform developments. Moreover, implementation of support programs for emerging businesses, tax exemption, financial assistance and other incentives is required to be emphasized in order to promote a congenial environment for innovation and entrepreneurship. Collaboration along with innovation-driven growth among business, academic, and governmental sectors may also be fostered in order to provide a lively and healthy platform for Information Technology / SMEs organizations.

Furthermore, formation of a system of resources to enhance healthcare infrastructure, particularly in underserved areas is required to be encouraged to mitigate pressure on healthcare systems and increase access to superior healthcare facilities. There is also a requirement to motivate medical practitioners to render their service in rural areas through the strategies of Loan Forgiveness and providing better avenues of opportunities for their professional enhancement. Thus, reforms are required to be formulated to facilitate the entry of skilled individuals and specialists, streamline processes for recognizing international credentials and enable the transfer of skilled individuals' rehabilitation into the workforce and create opportunities for diaspora contribution in domestic enterprises.

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