BRAIN DRAIN IN PAKISTAN: ANALYZING TREND, CAUSES AND CONSEQUENCES

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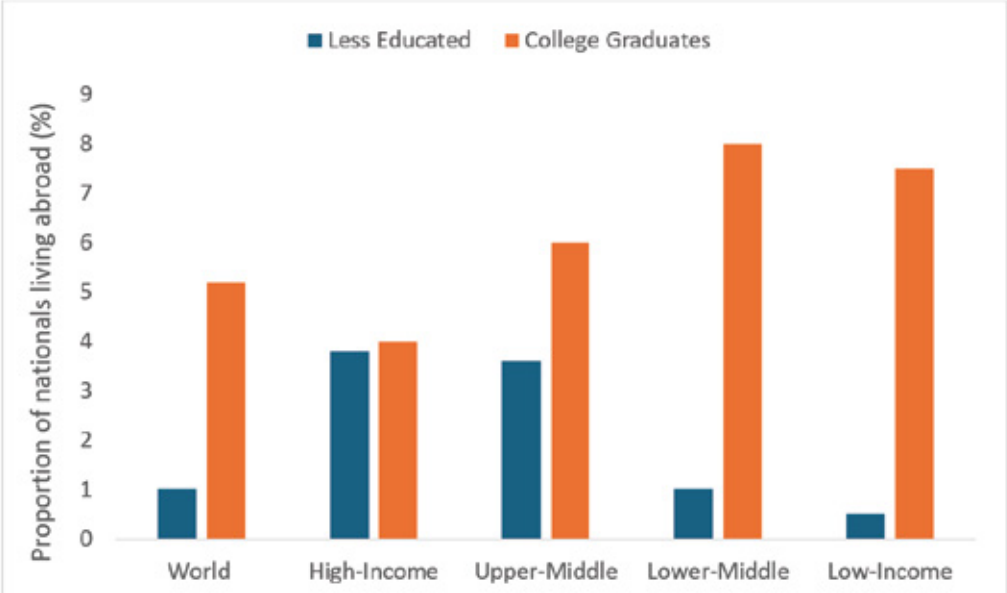
Brain drain could be defined as the migration of highly skilled human resources (Docquier et al., 2009) from one country to another or often the migration of highly skilled people from lower-income countries to high-income countries is termed as "brain drain" (World Bank report, 2023).

Talent from less developed countries is drawn to developed nations due to their higher salaries, access to cutting-edge technology, better living standards, and more stable political environments. The migration of high-skilled workers is a global phenomenon. However, most of the migration is from developing to developed countries. For high-income member countries of the Organization for Economic Cooperation and Development (OECD) it stands at 4 percent of the highly skilled population, for middle-income countries this value is slightly over 10 percent and for low-income countries figures are 20 percent (Artuc et al.,2015; World Bank Report, 2023). Docquier (2014), through his landmark study, revealed the same findings that a low percentage of skilled people migrate from developed countries whereas in developing countries this percentage is very high as is shown in figure below.

Figure 10: REER under Scenario 4.1



Source: Calculations based on Labor Force Survey 2020-21

Pakistan, too being a developing country, stands third in South Asia (after India and Bangladesh) and sixth in the world in human capital migration (Farooq and Ahmad, 2017). Brain drain is the growing concern for developing countries like Pakistan, as these countries invest heavily in education and training of their young professionals. However, when these individuals migrate, significant resources are lost, and the recipient states benefit directly from these migrations as they haven't paid any cost for it. Any nation's intellectuals are among its most expensive assets due to their training, which involves both time and material costs, but more significantly, lost opportunities.

One of the early works done by Haque (2006) highlighted the possible reasons behind the problem. As per him, poor governance infrastructure—lack of personal security, poor roads and railway system, lack of clean environment and decent facilities to raise children, are often quoted as one of the few reasons responsible for this brain drain. Moreover, non-comparative wage rates and lack of job opportunities for highly educated individuals is one of the other main reasons which lead to migration of people from the country.

Although the Pakistani diaspora, dispersed globally, has significantly contributed to the nation's economy through the remittances, thereby enhancing livelihoods and alleviating economic pressures during crises such as energy shortages, food insecurity, and heightened foreign debt repayments (Ahmed, 2021). But the question is how much is contributed by highly qualified and highly skilled labor as the size of remittance inflows depends on migrants' characteristics. Low-skilled migrants are more likely to migrate alone and remit a significant portion of their income on a regular basis to support the families they left behind (World Bank, 2023). For instance, Indian migrants in the Gulf Cooperation Council (GCC) countries send, on average, nearly 70 percent of their earnings to their families. On the other hand, high-skilled migrants are more likely to come from wealthier families, migrate with their immediate families, and move permanently. They do remit high amounts but that is usually done infrequently.

Khan and Ahmad (2024) from PIDE measured the cost of brain drain for Pakistan's economy. When the costs of losing a highly qualified worker to the home country outweigh the benefits of the worker's remittances and knowledge spillovers, it is determined that brain drain is a development barrier. When employees hold jobs that are considered necessary for their nation of origin, these negative effects become even more significant.

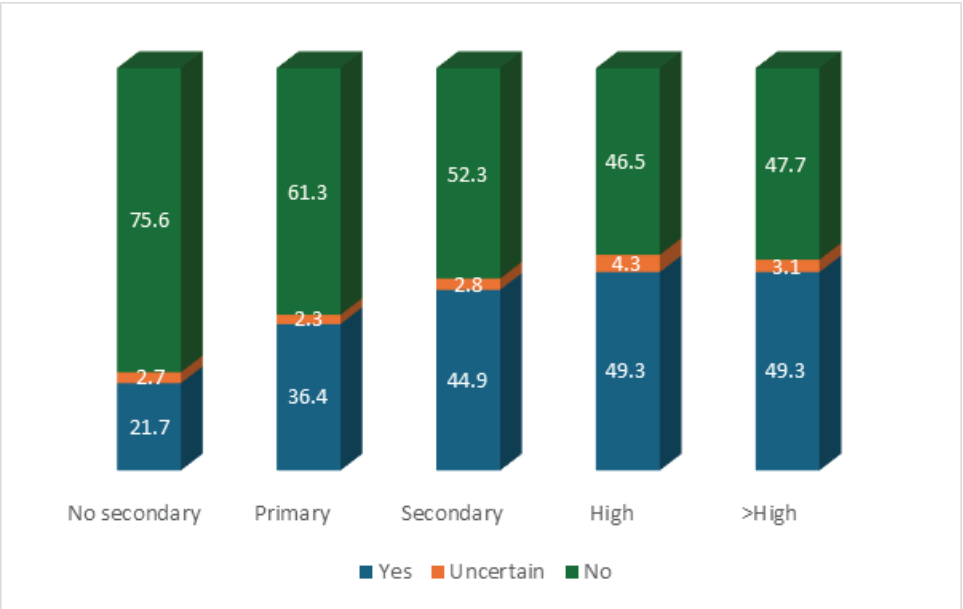
Therefore, the objective of our study is to analyze this trend of human capital flight, major factors responsible for it and its consequences for Pakistan economy. The research will be carried out by measuring brain drain skill wise using the method of Docquier et al., (2009). To analyze the causes and consequences of this brain drain past studies will be reviewed in detail.

The study has a great significance as it explores an important topic directly impacting the country's growth and advancement. By outlining the underlying causes and contributing factors of the brain drain, it provides policymakers, educational institutions, and other relevant organizations with insightful information. The study might influence decision-makers to launch programs that entice highly educated individuals to reside, work, and contribute to the nation's development.

Trend of Human Capital Flight

Before analyzing the facts and figures regarding human capital flight from Pakistan it is imperative to know what general public thinks about this phenomenon. For this purpose, PIDE's pioneer work by Nayab (2022) is an important source to consult. Findings of her survey show that 37% of the people in Pakistan want to leave the country. One of her interesting findings is that educated people are more interested in leaving Pakistan as compared to low educated ones as depicted in below figure.

Figure 2: Desire to Leave Country by Education Level



Source: PIDE BASICS Survey, 2022.

One strand of literature argues that the percentage of highly qualified/skilled migrants has remained less than 10 % in total migration for most of Pakistan's migration history. In 2011-2015, when a total of 3.7 million workers went overseas, only 2 % fell in this category. The percentage in 2021-22 was only 5 %. A majority of the outflows since 1971 in fact comprised of semi-skilled and unskilled workers (Shah et al., 2023). Thus, ringing alarm about the unprecedented high outflow of qualified/skilled workers is misplaced and based on inaccurate analysis of the available data (Shah et al., 2024). However, this is not the complete story as the full scenario of skilled people migration only becomes clear when we compare the percentage of migrants in a specific skill/education with the total percentage of people, having that skill/education, available in the origin country. To measure this percentage of migrants by skill wise for Pakistan's economy we adopted the methodology of Docquier et al., (2009).

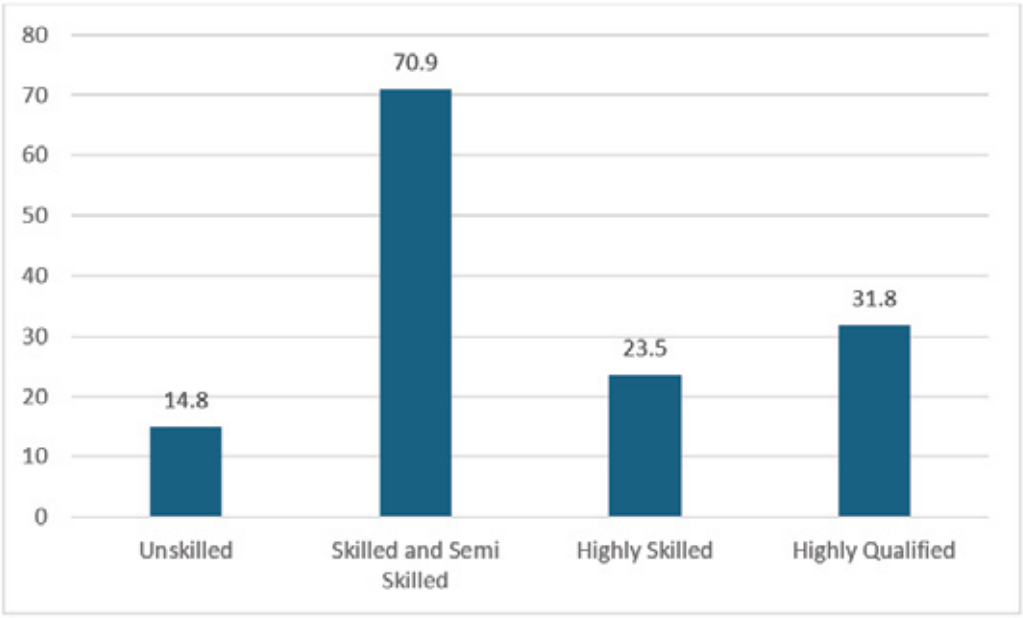
Where migration rate is defined as below;

$$m_s = (\Sigma M_s)/(\Sigma M_s + \Sigma N_s)$$

Where M_s is the stock of people migrated from origin country with specific skills in a given period and Ns is the total stock of human capital with these skills in a given period. To measure the specific skill into years of schooling we took the definition of Khan and Ahmad (2024) as they define the brain drain separately for semi-skilled and skilled, highly skilled and highly qualified people. Whereas they defined skilled and semi-skilled having 12 years of education, highly skilled individuals having 16 years of education and highly qualified are those with 18 years of education or above.

The below figure shows that the percentage of unskilled migrants is 14 % in Pakistan. Whereas the highest percentage of migration is observed against skilled and semi-skilled category is at 70.9%, followed by highly qualified and highly skilled people.

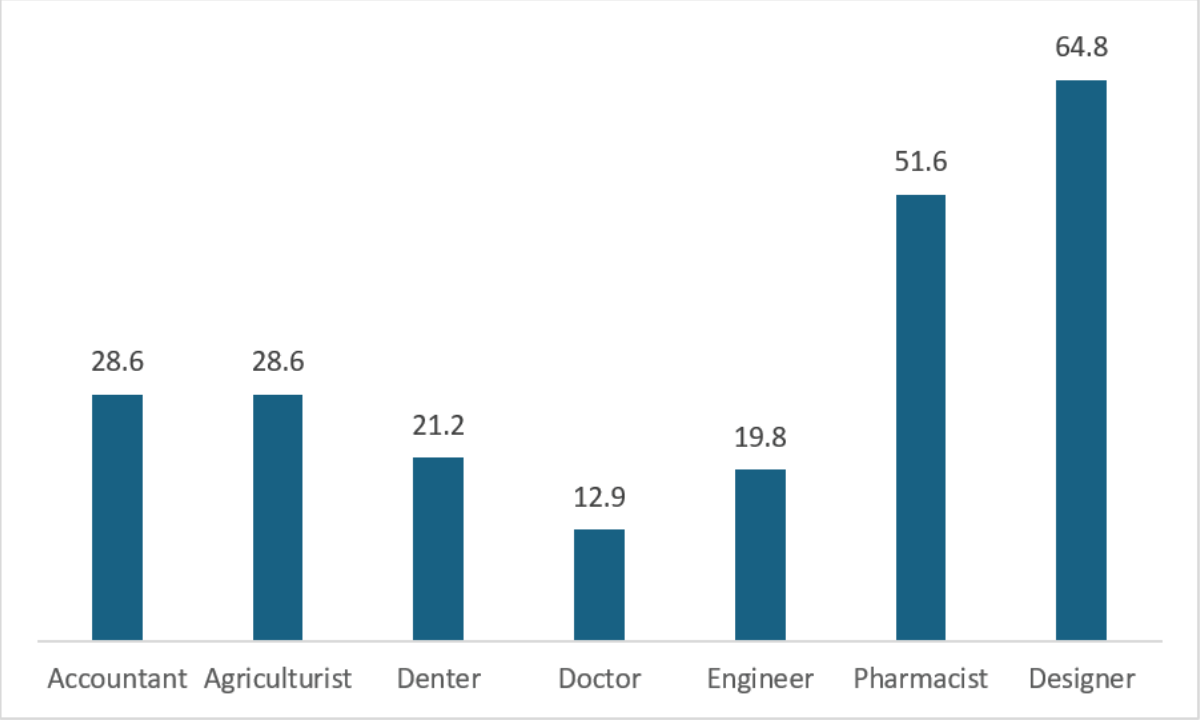
Figure 3: The Percentage of Human Capital Flight by Skilled Level



Source: Author's calculations from BEOE, 2023.

Pakistan is among one of the most uneducated countries in the Asia. It's literacy rate, which is 59.1%, is even lower than that of Bhutan and Nepal, which have literacy rates of 65.5% and 68% respectively. Maldives and Sri Lanka have made great achievements in literacy as more than 90% of the population in both countries is literate. Also, India and Bangladesh have more than 74% literacy rate. However, despite having a low literacy rate we see that trend of human capital flight from Pakistan has been increasing alarmingly over the years. This is a serious issue as it shows that highly educated people are leaving the country and people with low skills and low education are left behind. A major growth in migration is seen among the professionals like Pharmacists, designers, followed by accountants and agriculturists that may show the limited demand of these professions in Pakistan's labour market.

Figure 4: Growth rate of Human Capital Flight across Professionals



Source: BEOE, 2023 report

The US, Canada, Europe, and the Middle East are home to a large number of the nation's physicians, engineers, academics, and highly qualified professionals (BEOE, 2023). The number of Pakistani immigrants opting to go to China has significantly increased in recent years, mostly as a result of China providing more than 20,000 scholarships to students from Pakistan (Hippier and Ahmed, 2022). Pakistani immigrants in Thailand are mostly engaged in business endeavors (Zafar, 2023).

Factors Influencing Brain Drain

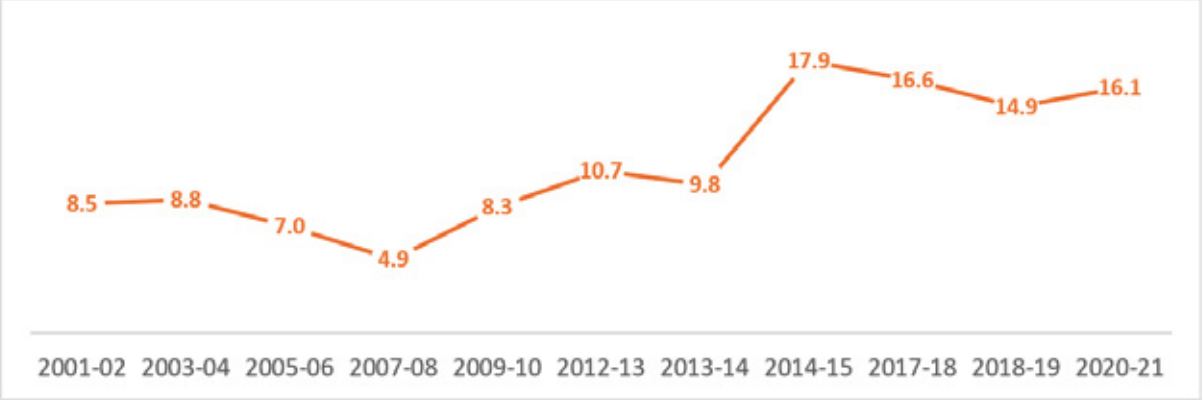
Growth and household production theories proclaim that human capital has an important role for economic growth both at individual and national level. Human capital is the stock of competences, skills, knowledge, education, and training. At individual level accumulated human capital results in increased productivity through knowledge and hence raises

earnings (Becker, 1964). At national level, endogenous growth theories (Lucas, 1988) also emphasize the idea that increasing innovative capacity of a country may greatly promote its economic growth. These models allow for increasing returns through endogenous technical change such as arising from innovation or discovery of new goods through increased R&D (Haque, 2006).

These prospects for the positive impact of human capital on the economy contributed to an increased enrolment in educational institutions across the world as many countries adopted education enhancement as a public policy. In case of Pakistan too, University Grant Commission was upgraded to Higher Education Commission in the year 2002. The objective of this move was to upgrade universities and degree awarding institutes for making access to higher education easy for all, so number of universities increased from 54 to 233 in just last two decades. A number of foreign and indigenous scholarships were awarded to increase of PhDs keeping in mind that higher education promotes the economic growth of a country. The estimates of Ahsan and Khan (2023) from PIDE show that the average growth rate of higher education observed was 18.5 percent from 2001-02 to 201-22.

However, due to poor institutional management, inability of labor markets to absorb increased supply and also the poor quality of education made it difficult to translate these increased years of schooling into increased human capital. Moreover, the worse economic situation of the labor market and its inability to absorb the huge number of skilful labor force resulted in high unemployment of these graduates. The unemployment rate among the tertiary educated has been more alarming reaching about 18% in the year 2014 as shown in Figure 5.

Figure 5: Graduate Unemployment Rate over the time in Pakistan from 2001-02 to 2020-21

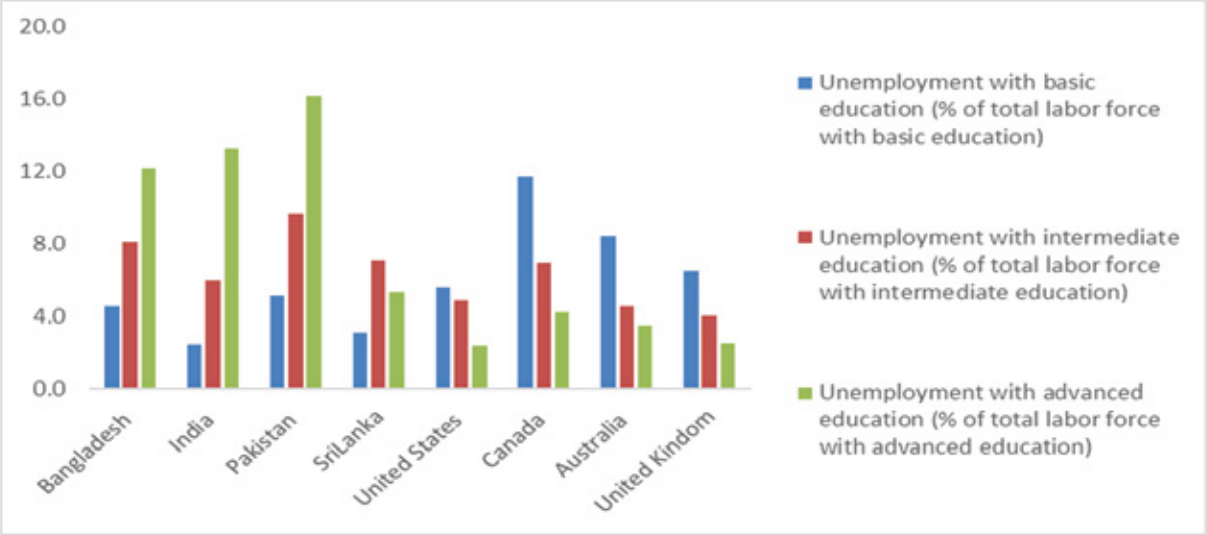


Source: Authors' Calculation based on Labor Force Survey (2001-02 to 2020-21).

Haque and Nayab (2021) from PIDE point out that only 31 percent of the youth with degrees, including professional ones, are unemployed, with females' employment at 51 percent and males at 16 percent. Rural graduate unemployment is even much higher than urban, begging the question of mobility. Most of the literature suggests that one of the leading causes of brain drain are unemployment and desire for better living standards (Hijazi et al., 2024; Sajjad, 2011; Zafar, 2023). Similarly, opinion came to light by PIDE's (2020) basic survey as 78% of the participants wanted to leave the country for better income. In

In developed countries, education plays an important role in reducing unemployment. However, in developing countries unemployment risks are quite higher among well-educated too due to insufficient demand for college graduates in the labor market as is depicted in Figure 6.

Figure 6: Unemployment Rate for Different Education Categories Across Countries



Source: World Bank, 2023

In one of the other related works, Ahsan and Khan (2023), from PIDE, analyzed the graduate unemployment by ¬field of study. Their analysis shows a more pessimistic picture of unemployment against some disciplines. In just two years, the unemployment rate among engineers has doubled, rising from 11% to 23.5% as depicted in table 1. Comparable circumstances have been noted for graduates in agriculture and computer science. Although graduates in the medical sciences have the lowest unemployment rates relative to graduates in other fields, however in just two years, the medical discipline's joblessness also experienced a dramatic increase of 68 percent. Thus, as previously indicated in figure 2, unemployment may be a major decisive factor for highly educated and competent people in leaving a country.

Table 1: Unemployment Rate of Graduates by Field of Study (2018-19 and 2020-21)

Field of Study	**Unemployment rate**	
	2018-19	2020-21
Degree Engineering	11.2	23.5
Degree Medicine	6.4	10.8
Degree Computer	14.2	22.6
Degree Agriculture	11.4	29.4
Degree in other subjects	15.5	16.1
MPhil/ PhD	12.0	12.2
Total	14.9	16.1

Source: Authors' Calculation based on LFS 2018-19 and 2020-21.

The other common drivers of brain drain in Pakistan are longstanding governance issues, poor living standards, unstable financial situation and deteriorating infrastructure (Kousar et al., 2020). As it has been observed that demographic transition and higher education expansion compels graduates to work as over educated and may result in declining returns to education across the cohort (Ahsan et al., 2024; Ahsan, 2023) In addition, people are moving abroad in search of a more stable life due to continued instability and the country's worsening law and order situation (Afzal et al., 2012; Mishra, 2023). Shahid (2020) from PIDE holds a bit harsh view regarding this brain drain. As per him there is no space in the country for creative thinkers and individuals with cutting-edge abilities. Instead, the hierarchical and colonial mindset prevailing in the institutions suggests that there is no need for high-caliber human capital. It is challenging to develop and produce high-quality human capital in such an atmosphere, and it is also challenging to hold onto it for an extended period.

Consequences of Brain Drain

The transfer of highly educated and skilled individuals from Pakistan has many implications that have a big impact on the nation's social structure, economy, and rate of progress. Its broad ramifications have a significant impact on the nation's development, economy, and society. The main effect is a considerable reduction in skilled human resource. The exodus of highly skilled and educated citizens deprives the country from their experience, knowledge, and skills, impeding innovation and technological growth.

One of the other pioneer studies conducted in PIDE by Khan and Ahmad (2024) calculated the economic cost to Pakistan for the talent lost because of brain drain. The numerous facets of Pakistan's talent loss were investigated in this study. By taking both explicit and implicit costs into account, they estimated the economic impact of this talent loss. Additionally, they also analyzed the decline in production capability of the nation of origin. Their results show that the cost to the country of origin becomes significantly high when productivity loss is considered. Immigrants often contribute to the GDP of destination countries through their work and productivity, resulting in considerable economic losses at origin countries. As per their calculation, which is based on migrants' contribution to global GDP subtracting remittances received, Pakistan suffered a productivity loss of US $ 303.4 billion in just year 2023.

This human capital flight from Pakistan raises many other concerns too that need to be addressed. It shows a limited demand in the domestic economy for highly educated workers and may show the slow growth of the business sector and overall poor economic performance of the country. Rapid technological growth and innovation are at the heart of the contemporaneous development of both developed and underdeveloped nations. If we talk about the Pakistan's manufacturing sector, its share in Gross Domestic Product (GDP) is just 12.79 percent and the sector employs only 16.1 percent of the country's labor force (Mudasir, 2019). Hence, the country needs to focus more on industrial sector development. If properly utilized this educated lot could help in boosting country's education intensive products' exports and could also help in reducing unemployment and country's brain drain.

Moreover, Pakistan is an agrarian economy, and agriculture is considered as backbone of the country. However, it's share in GDP is only 19.2 percent and it provides employment to about 38.5 percent of the labor force. But the important question to ask is how much

targets the employment of educated youth and personnel. Due to low potential for the educated lot in agriculture sector, unfortunately, most of the present labor force is illiterate. Perhaps this is the reason that Pakistan imports a large quantity of seeds, fertilizer, pesticides and other agriculture related machinery from foreign countries. Pakistan spends annually 260,844 US dollar, only to import insecticides and fertilizer[27] . Moreover, Pakistan's export in the agriculture sector is limited to raw material only and there is a lack of expertise and technology to convert this raw material into exportable finished products.

The world is moving fast towards an extraordinary technological advancement that has brought us to the crossroads of innovation in computing and communications. Technologies such as mobile broadband, the Internet of Things (IoTs), and Artificial Intelligence (AI) are rapidly shaping our lives. However, in Pakistan, 22.6 percent graduates in computer sciences were facing unemployment in 2020-21 and growth rate of computer experts' migration is 30%.

Finally, the doctors and medical professionals have comparatively low migration rate when compared to other highly qualified people. That may show the high that the demand for doctors is always high in developing countries and they are also able to easily engage in entrepreneurial activities by practicing their profession independently by opening their own clinics and hospitals. In addition, as of 2020 only 1.632 physicians are available for 1000 habitants in Pakistan. So, this shows that there is a dire need for doctors to fulfill this shortage. On the other trade of pharmaceutical equipment shows Pakistan spends huge foreign exchange reserves on importing medical equipment and medicines. According to the United Nations COMTRADE database, international trade import of pharmaceutical products was US$3.78 billion during the year 2021. So, there is a need to develop a health infrastructure that not only absorbs these medical graduates but also helps to improve the overall healthcare industry.

Conclusion and Way Forward

Brian drain is one of the major problems Pakistan has been facing since last two decades. The human capital and intellectuals that are an important source for the growth of low-income countries have left the country and half of these are in queue to follow suit. So, there is need to effectively deal with the problem by adopting a comprehensive strategy that addresses the root cause of the problem and creates a conducive climate for retaining and using highly talented workers to contribute to the country's progress.

First there is a need to enhance local opportunities for better job prospects through investment in industries, innovation, and entrepreneurship as this may retain and also attract talent back. For this PIDE reforms agenda (2021) could be a good guide to start. The agenda emphasizes on removing overregulation and over documentation as it hinders many startups from taking off. Not surprising that Pakistan ranks too low in all indices related to ease of business and competitiveness. The agenda further emphasizes reduced government footprint in the economy, which is currently 67%, as it is a big obstacle in offering equal opportunities for all market players and to ensure an open and fair competition.

[27] Federal Bureau of Statistics, Annual Analytical Report on External Trade Statistics of Pakistan, FY 2020-21.

Finally, PIDE report "Opportunity to Excel: Now and the Future" by Haque and Nayab (2021) ascertains a talent focused opportunity approach that may permit creativity and entrepreneurship to prosper everywhere. This could result in a network of activities and many fresh ideas and as a result an increase in GDP due to collaboration with global talent and knowledge networks.

REFERENCES

Ahmed, W. (December 20, 2019). Brain drain: Ten million Pakistanis out for greener pastures, Express Tribune.

Ahsan, H & Khan, J. (2023). Disaggregating the Graduate Unemployment in Pakistan. Knowledge Brief. (No: 100). Pakistan Institute of Development Economics (PIDE).

Ahsan, H. (2024). Impact of Education Mismatch on Earnings: Evidence from Pakistan's Labor Market, Working Paper (No: 1). Pakistan Institute of Development Economics (PIDE).

Ahsan, H., Idrees, M., & Ahmed, E. (2021). Returns to Education in Pakistan: An Age Period Cohort Analysis. Pakistan Economic Review, 4:1 (Winter 2021), PP. 76-97

Artuc, Erhan, Frédéric Docquier, Çağlar Özden, and Chris topher Robert Parsons. 2015. "A Global Assessment of Human Capital Mobility: The Role of Non-OECD Destinations." World Development 65 (January): 6–26.

British Council. (2015). Skills needed: Addressing South Asia's deficit of technical and soft skills: Analysing the gap in Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka.

Docquier, F. (2014). The Brain Drain from Developing Countries. IZA World of Labor.

Docquier, F., Lowell, B. L., & Marfouk, A. (2009). A Gendered Assessment of Highly Skilled Emigration. Population and Development review, 35(2), 297-321.

Farooq, S. and Ahmad, E. (2017) Brain Drain from Pakistan: An Empirical Analysis, Forman Journal of Economic Studies, 13, 55-81.

Haque, N & Nayab, D. (2021). Pakistan Opportunity to Excel: Now and the Future. PIDE Monograph.

Haque, N. U. (2006). Brain Drain or Human Capital Flight (No. 11). Pakistan Institute of Development Economics (PIDE).

Hijazi, M. Y., Mumtaz, T., & Shah, A. A. (2024). Pakistan's Brain Drain Dilemma: A Content Analysis. Annals of Human and Social Sciences, 5(2), 357-367.

Hippier, J., & Ahmed, V. (Eds.). (2022). Global Pakistan: Pakistan's Role in the International System. Friedrich-Ebert-Stiftung (FES), Pakistan Office.

Khan, J. & Ahmad, J. (2024). Costs of Lost Talent in Pakistan. Costnomics. Pakistan Institute of Development Economics (PIDE).

Lucas, Robert E., Jr. (1988) On the Mechanics of Economic Development. Journal of Monetary Economics 22, 3-42.

Maqbool, M. S., Mahmood, T., Sattar, A., & Bhalli, M. N. (2013). Determinants of unemployment: Empirical evidences from Pakistan. Pakistan Economic and Social Review, 191-208.

Meo, S. A., & Sultan, T. (2023). Brain drain of healthcare professionals from Pakistan from 1971 to 2022: Evidence-based analysis. Pakistan Journal of Medical Sciences, 39(4),

Mishra, S. (2023, January 17). Pakistan's economic crisis. University of Michigan News. https://news.umich.edu/pakistans-economic-crisis/

Nayab, D. (2022). Desire to Live in Pakistan: Stay or Leave? PIDE Basic Survey, Number 4.

PIDE. (2021). The PIDE Reform Agenda for Accelerated and Sustained Growth – PIDE. https://pide.org.pk/research/the-pide-reform-agenda-for-accelerated-and-sustained-growth/

Sajjad, N. (2011). Causes and Solutions to Intellectual Brain Drain in Pakistan, The Dialogue, 39 (6). 32-55.

Shah, M. A., Rana, J. I., & Ayoub, M. (2023). Brain Drain from Pakistan: Causes and Factors. Qlantic Journal of Social Sciences, 4(3), 344-351.

Shah, N. M., Shahzad, A., Qudduas, S. & Qazi, M. (2024). Pakistan migration report 2024. Centre on International Migration, Remittances and Diaspora, Lahore School of Economics.

Shahid, M. (2020). Is Pakistan Talent Repellent. PIDE, Knowledge Brief, No 11.

World Bank.(2023) World Bank report 2023, "Migration , Refugees and Societies", Washington, DC: World Bank; New York: Oxford University Press.

Zafar, S. (2023). Situation of Brain Drain in Pakistan, with a focus on the Healthcare Sector. The Pakistan Development Review, 62(4), 591-598.