

Brain Drain, its Determinants and Solutions

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Brain drain is an important issue that leads to losing skilled human resource ultimately results in psychosocial and economic instability of the country. The aim of the present study was to review the different studies on the phenomenon of brain drain. Studies on different issues were thoroughly reviewed which include the definition, causes, determinants, evolution and the recommendations for reducing negative consequences of brain drain. Also studies of different developing countries and of Pakistan as well were reviewed to see the negative and positive consequences of this issue. Pakistan because of its political instability and economic downfall is facing the problem of skilled trainees, doctors and professionals; therefore the present study focused the causes and effects of brain drain. Some recommendations were identified from the analysis of different research papers, which can help in the reduction of negative factors associated with the Brain drain phenomena.

Keywords. Brain drain, causes of brain drain, effects of brain drain and developing countries

Brain drain can be defined as the migration of skilled individuals like doctors, engineers, and businessman from the country. The word human capital flight is also used for brain drain. The phenomenon of Brain drain is the “migration of skilled human resources in search of better living standard and quality of life, higher salaries, access to

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advanced technology and more stable political conditions in different places worldwide for trade, education, etc” (Sunita & Ronald, 2005).

Evolution of brain drain

Mr. Carolina Brandi concludes that the phenomena of brain drain are not a new one in the human civilization. Social scientists were interested to study it from its beginning. Till the end of World War II emigrants were migrated from the less educated countries, and since then was the focus of study. After the end of Second World War highly qualified and skilled individuals started migrated from their native town. It is in fact because of the changing social and political scenario in the world. In the early 1960s the Royal Society of London first publish the term “Brain Drain”.(Royal Society, 1963). In its original terms the word means the migration of British scientists to the U.S countries.

A Review of Brain Drain

The present study is conducted to review different literature on the topic of Brain Drain. Most importantly its causes, its determinants, and its remedy and brain drain issue in developing country. Brian drain is defined as the large emigrants of individual with technical skills and knowledge because of different factors within their country. Also termed as human capital flight as it is the moving of capital from the country. The term was first used by the Royal society to explain the flight of technologist and scientists to North America from post-war Europe. The opposite phenomenon is brain gain, which is the immigration of large number of people with different technical skills. Dr Muhammad Reza Irvani considers this issue as a problem in his study. He consider it as a political problem, as an economical problem and as a psychosocial problem as well. He further review different problems faced by India due to Brain drain. According to official estimates of India Overseas Employment Corporation, nearly 36,000 professionals, including doctors, engineers and teachers, have migrated to other countries in the last 30 years.

Brain drain adversely affects the Caribbean countries, Nadja Johnson (2008-2009). Nadja Johnson gives reference of David Hart (2006), that he used the term “high skill migration” for brain drain.

According to high skilled migration, it is the emigration of highly skilled individuals, who can make good contribution in the development of country if they stay. Caribbean countries are more affected by the loss of skilled individuals. The paper also explains the fact that 41% of emigrants from Caribbean countries in the education sector migrated to US. Some oppose the idea of brain drain and consider remittance as the compensation for this problem because the percentage of remittance is high in Caribbean countries. Remittance is the money that the emigrants send back to their friends and relatives (Kapur and McHale 2003). Remittances not only beneficial for the friends and relatives but also can increase the economy of the country. The problem is not that the developed countries drag skilled people but the fault is also of the developing countries. So different push and pull factors were found out which are responsible for the brain drain. The country must provide with sufficient educational and economical incentives to make people stay at their country. Also provide them with better political environment, health and good wages and suitable environment for business. Although it is difficult to stop people from migrating to developed countries, still developing countries should work on the largest context and the decision of migration should be left for the individual.

The study was conducted in Kenya to know the effect of brain drain on Public Sector University that is Kenya's Moi University Main Campus; sample was drawn from seven schools. It was found that the level of brain drain was higher with staff migrating to America followed by Asia, Europe, Africa and Australia in that order. Increase and provision of research budget to study the brain drain in further detail and investigate its consequences, be they negative, positive or both in the best interest of the state. The findings of this study can be effective to make the stakeholders realize the significance of brain drain and the dire need of policies that will help to reduce brain drain in public universities (Mary Gorrito Wosyanju: et al. 2007). The findings revealed the determinants of the brain drain are weak education system, inadequate training for the students and the use of their skills in their home country.

Brain Drain and its Determinants: A Major Issue for Small States

There has been a serious interest of researchers in literature on the relationship between the brain drain and country size, as well as the

overall extent of loss of human capital in small states. The literature supports the phenomenon that small states face more problem in emigration of skilled individuals because they i) lose a larger proportion of their skilled labor force and ii) they face with more push factors. It was also found that the correlation between human capital indicators and country size is close to zero. This indicates that small states are more successful in producing skilled natives and less successful in retaining them.

The definition used by current study of small states followed as “states that have 1.5 million people.” So by using this standard in 2000, 45 developing countries are small countries. The result shows that small countries face a large number of migration of skilled people (43.2%). The ratio is 3 out of 7 individual who migrated from their country. Lopez and Schiff (1998) and Rotte and Vogler (2000), argue that economic growth of the country can be a triggering event for the emigration of people. So by increasing GDP per capita can reduce the flow of emigrants from the country. Kaufman et al. (2003) identified that socio political environment of the country can be a push factor for the immigration of skilled individuals (Michel Beine 2008).

Impact of brain drain on quality of education in Kenya University

The migration of personnel from the country is the major drain in the development of the country and not only problematic for Kenya but is also a global issue. The impact of brain drain on public university of Kenya Mao University main campus was examined; sample was drawn from its seven schools. Research was carried out through case study design and findings were analyzed by using qualitative and quantitative techniques. Total 480 participants were included in the sample, which further consisted of 120 staff members of the university and 360 students. The findings showed that the brain drain percentage is higher for people moving to America to Asia, Europe, Africa, and Australia. It was recommended that universities should increase the amount of budget for research in the university and provide opportunities to the students and staff members in order to control brain drain. The findings focused on the collective responsibility of stakeholders for understanding the causes and effects of brain drain and formulation of policies for alleviating brain drain in public universities.

Determinants of Human Capital Theory, Growth and Brain Drain; an Econometric Analysis for 77 Countries

The present study examines the relationship of human capital, growth and brain drain in 77 countries. Other variables were also reviewed which affects these variables. Observing the effects of brain drain on human capital and economic growth, it is assumed that the migration increased growth in the developed countries and decrease while it slows down growth in LCD. The results indicated when lack of employment, per capita income and wages increases it decrease the frequency of migration as well. Also when the poverty increase in country, migration increases with it. Another factor for migration is the skilled labor. Better living standards, good wages and better schooling increase the chances of migration. According to Straubhaar 2000 developed countries gain more Human Capital level with the import of skill labor. While developing countries did not receive any gain and in return they loss significant skill of emigrants which can be necessary for the development. (BILDIRICI, Melike, ORCAN, Melda SUNAL, Seçkin AYKAÇ, Elçin 2005).

Thu (2007) argued that government should take step to improve the condition of country and make the environment conducive for the people so that they stay in their country.

Brain Drain and Pakistan

In the trend of globalization developed countries are attracting qualified skill workers from the developing countries. They attract the immigrants through different pull factors; one is the incentive of scholarship. Pakistan as a developing country is also faced with the problem of brain drain and its diverse effects. It is in the mid of 1970s that Pakistan face with the problem of skilled migrants to the Middle East and lately educational professional to the USA and Europe. According to the Pakistan's Bureau of Emigration and Oversees Employment (2014) since 1971 till July 2014 total of 7511582 have immigrated to various parts of the world. The most devastating effects on the development of the country is when the educational professionals migrated to developed countries. And leave the country in order to seek

better future for them and by decreasing Pakistan's economy. Therefore research on drainage of skilled individual is necessary to eradicate and find out the remedy for brain drain in Pakistan.

Literature review identified that according to 127 executive conference conducted by UNESCO estimated that number of highly qualified Pakistani migrants are increasing in number day by day and in a rough estimate more than 50% . The increase ratio in 1990 was calculated and found 6.1% which dramatically increased, and in the 2000 the figure was found 9.2%. According to Turpin (2007) estimation, approximately 18000 trained engineers (70 percent of total) were found migrated to developed countries. Because of the political instability and economical problems most of the Pakistani like to leave Pakistan and settled in the other countries where they feel their future is safer. According to Gallup survey highly skilled, skilled, semi skilled and even non skilled workers desire to migrate because they no longer believe on the economy and future of Pakistan. Government of Pakistan failed to remove the downside of brain drain in Pakistan. In July 2009, British Council discussed the reasons why students in Pakistan are leaving their home country. One factor is the employability because foreign degree possess more credibility in job markets.

Causes and solution to intellectual Brain drain in Pakistan

The present paper suggests some causes and solution for the brain drain in Pakistan. The results based on the information from 13 immigration consultancies and head of the higher Education Institution in Peshawar university through judgmental, purposive and accidental sampling. Questionnaire for emigrants and faculty members were prepared. 71% of the respondents consider job dissatisfaction, professional isolation, and poor economic returns with lack of man power as driving force to leave the country. 48% emigrants consider lack of opportunity for further study as the causal factor. 33% reports less stable policies and threats to their lives. 23% migrated because to maintain good life standard. Similarly to stop brain drain respondents suggest the following remedies.

Medical graduates of Pakistan

In a study of medical graduates of Pakistan the supporter highlights the importance of migrating to developed country with the idea that they return with more skills and technological knowhow and with better expertise to use it in their own country and environment (Zarmeneh Aly and Fawad Taj 2008).

Different Causes Identified By Individuals Responses

35%	Employment opportunities
10%	Basic facilities
15%	Make educational reforms
38%	Good educational environment and research facilities.
23%	Fair selection and fair merit system
30%	Consideration of economic problems
29%	Respect, encouragement and good social behavior with the qualified individuals.
5%	Awareness campaign
8%	Need to stop corruption

Terminologies of brain drain

Lewell and Findly identified following terminologies

Optimal brain drain

The theory based on the idea that some developing country benefit from the exact amount of skilled emigrants.

Brain waste

The term is used to describe the unemployment of skilled individuals. And when a highly skilled individual are served as low grade employ in migrated country.

Brain circulation

Is used for the return of native to their country. In this way the skilled individual help in the economic production of his/her native country.

Brain exchange

When loss of native is covered with highly skilled individuals from the foreign country.

Brain globalization

Certain amount of global skilled mobility is inevitable for the development of a state and to effectively participate in the global economy. Multinational organizations and other forces of globalization certainly require and demand for international relations and movement.

Brain export

Educate and export highly skilled individuals for economic benefits, in return the country gain financial benefits from their export. Nasir Nadeem and Dr Muhammad Ashfaq, identified following causes of brain drain.

1. Poor economic conditions.
2. Slow promotion process.
3. Non-availability of opportunities for youth in the existing social set-up.

Brain drain and inequality among nations

A study by Frideric Docquier and Khalid Sekkat raise question about the brain drain as a curse or a boon. Policy issues were also finding out related to international organization and home country government. The study focused on the evolution of brain drain and its determinants. In its second part study discussed how brain drain can be effective for the source country by making contribution in their economic stock. Policies at destination, education policy and taxation policies were discussed to talk about the negative and positive outcomes of this phenomenon. For the developed and rich countries brain drain can have adverse effect if they didn't get it or compensate it through brain circulation.

Brain drain and economic growth theory

The impact of migration on human capital formation and growth in the sending country is studied using cross section of the 37 countries. Two growth effects were identified, the ex ante "brain effect" and the ex post "brain effect". The first effect has a positive impact on the education as a beneficial brain drain because it leads to investment on the education sector of the country. The second may be detrimental because it is an actual flow of migration. (Michel Beine, Fré'de'ric Docquier , Hillel Rapoport, 2001)

Brain drain in developing countries

Fré'de'ric Docquier, Olivier Lohest, and Abdeslam Marfouk present their findings on the register data from the organization for economic growth and development (OECD) countries to study the determinants of brain drain in the developing countries. The study focus on the two components of the brain drain: the openness to emigration, as measured by the rates of emigrants by sending countries. And the schooling level as measured by the level of education of the emigrants compared with natives.

The factors for the openness increase due to political instability, country size, native's human capital, colonial links and geographical proximity with the OECD countries. The schooling factors depend on the native's human capital, the type of destination country, religious

fractionalizations, and distances. Therefore, brain drain is high in countries that situated near OECD countries and where native's average level of schooling is low. It clarifies the causes of brain drain in different countries. Pacific and Caribbean countries suffer from the same problem of smallness and proximity with OECD countries. Similarly this determinant of proximity is also a reason of Central America brain drain. Sub Saharan African countries are faced with problem of low paced development, political instability and ethnic and religious fractionalization, which lead them to suffer from the problem of brain drain. Public friendly policies to promote quality education and improved political environment may help in reducing brain drain.

Gedamu 2002 said that due to brain drain the countries face the problem of losing their natural supply of intellectual talents.

Brain drain unmitigated approach

Reccardo Faini (2003) study found little support for revisionist approach. He identified that first the skilled emigration lead to low remittance in the sending country. Secondly, little support was found for improving the skill composition can result in educational achievement in the home country.

Bran drain and policy response

Similarly health workers are important categories for the welfare of any country and their exodus towards developed country can be critical for the development. (Ronald Skeldon 2008)

Remittance and brain drain

Brain drain can lead to low level of remittance from the skilled emigrants because they will likely return to their host country (Riccardo Faini 2006).

Remittance increase

In the discussion paper by Yoko Niimi, Caglar Ozden and Maurice Schiff 2008 argued that remittance has a positive effect with

the education level. Therefore, source countries preferred skilled emigrants over unskilled emigrants. According to their analysis identified the determinants of remittances include migration level or rates, migrants' education level, income, source country, development of financial sector and expected growth rate.

Educated migrants

In a discussion paper the researcher identified through micro data from eleven destination country, that skilled migrants get better job opportunities and earn more money than unskilled emigrants, in return skilled emigrants send more money to their host country than do less skilled emigrants. This proves that sending skilled emigrants to developed country can earn more money and will improve the flow of remittance to the host country. (Bollard Albert; McKenzie David; Morten Melanie (Rapoport Hillel, 2009).

Human capital promoting brain gain

Manuel Heitor, Hugo Horta, Joana Mendonça (2003) in their analysis has given new idea in the context of brain drain which is called brain gain. Main data was worked in Portugal during the period of 1970 and 2010. The study focuses the flow of doctors from the country and their arrival in country. The following findings were analyzed.

- The analysis revealed that investment in science can lead to co-evolution of human capital formation and institutional capacity building leading to brain gain. Investment in R & D after slow process lead to development soon after 2008.
- Secondly analyses focus on the role of publicly and centralized grants for the research independent of any higher education commission. These programs should be implemented at the start and in the middle of any development to avoid any environmental influences on the research policies.
- Also public policies should be given importance that focused research environment in different universities.
- Programs that fund research units should do it in multi annual contract basis, independent of any internal university setup.

Brain drain in Africa

Emigration of Skilled Africans to Industrialized Countries (based on IOM and ECA estimates)

Time Period	Average Annual Rate	Total Number
1960-1974	1,800	27,000
1975-1984	4,000	40,000
1985-1989	12,000	60,000
Since 1990	20,000 --	

Impacts of Brain Drain

Negative

- Quantity of skilled workers have been decrease in Africa that is needed in development.
- Lose a good number of talented, skillful and innovative people, whether entrepreneurs or academics.
- Increase in dependence on foreign aid such as financial or technical assistance.
- Transfer of technology slows down and widens the gap between African and industrialized countries
- Negatively affects the scientific output
- Loss of money in income tax revenues and in potential contributions to gross domestic product

Positive

- Migrants return with new skills.
- House hold welfare increase with remittance from migrants.
- Remittances support the balance of payments

Best estimates suggest that Africans working abroad send home some US\$45 billion a year. While the importance of remittances for developing countries is not disputed, it does not account for the social costs and adverse effects on developing economies of the outflow of skilled personnel in the form of brain drain.

Lithuania brain drain

Four main factors of brain drain in Lithuanian migration identified by Aušra Kazlauskienė, Leonardas Rinkevičius (2006) in a study. Those factors were professional attraction at the developed countries, social economic status of Lithuania, academic system and collaboration i.e the level of education, and country macro economic status and government policy. Most of the migrants were discontented with these issues which became push factors for brain drain

Brain drain or gain?

According to Chi Hong Nguyen the issues of brain drain, brain gain, brain circulation, and brain development are not totally problematic, but they are considered realities of the knowledge-based economy where knowledge workers are mobile people, and their mobility must be managed proactively by making the domestic environment positive and simultaneously working on countries' development. A develop technology and science is helpful for the country but it is depended on the competent, productive research and developed workforce as well. So the countries must amend tier policies in order to negotiate with international countries to attract emigrants and maintain them for their development.

How to solve the issue

Dr. Reza Irvani in his paper discussed Bhagwati and Dellalifar, (1973), solution for brain drain that there should be implementation of tax policy in the developing countries in order to compensate their loss of man power. This could be achieved by imposing income tax on the Pakistani and South Asian citizen who migrated to Northern countries and this should be collected by government of Northern countries and handed over to south countries by U.N. Such a tax would help the sending country's economy in two ways; first as a source of country revenue to compensate country' investment expenses on its human capital, secondly, the tax help the country to increase the income of national skilled workforce.

Bhagwati and Hamada (1974, 1975) recommended refinements in the labour markets of the sending country that help the remaining skill workers to improve their skills by making emigration a positive activity.

Conclusion

Considering the result of all these studies we can assume that Brain drain has both positive and negative consequences. The fact that some consider it as a curse is now changing the cognition that it is now to be taken something very effective and helpful in the countries development. Although in the studies in early 1960s it was considered a problem, for this purpose different suggestions were given to reduce the emigration. The Baghwati Tax is one of the example in which the receiving country has to pay Tax to the source country in order to compensate the loss. After 1980s the trend change and different studies identified the advantages of Brain drain.

It is true that migration of skilled workers can be effective if proper measure is taken to reduce the negative consequences. The best effort in this regard is started by the Higher Education Commission is to introduce different research grants that help people in Pakistan to get better educational facilities and economical benefits. Results revealed that students talents are not respected because of lack of merit system talented and intellectual students are discouraged to stay in Pakistan. Most of them believe that foreign degree as an attractive thing to move; in short most of them consider social security is the big reason for leaving Pakistan. Some efforts are taken by the Government in developing countries will help emigrants to return to their native country and utilize their skills in the development of their country. Nearly half of the faculty members students and 3/4th non faculty students send remittances back to Pakistan which shows their attachment with their native country. Special steps should be taken in various academic fields should be launched with a view to encourage talents and career strengthening.

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