An Analysis of Factors Preventing and Reversing Brain Drain Phenomenon in Khyber Pakhtunkhuwa: Evidence from Education Sector

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Abstract

The present study aims to prove the factors affecting the brain drain in faculty members of Khyber Pakhtunkhwa. Furthermore, to test the assumptions if family and job placement helps in reversing brain drain and financial constrains and political instability leads to brain drain. A sample of 30 faculty members was randomly selected. Tests of normality as well as student's t-test for mean estimation and comparing with assumed test value using variables were conducted that indicated Faculty Members (Brains) place more emphasis on their Families, Job Placement as factors (Reversing) them to return to their homelands, whereby Financial Constraints and Political Instability were identified as factors responsible for leaving the province, state if not prevented.

Keywords: Brain drain, Human capital, Reverse brain drain

Introduction

The migration of highly educated and skilled workforce from developing to developed world in pursuit of better economic and living conditions is termed as brain drain. Such migration of human capital form developing to developed countries ultimately suffers the socio- economic progress of the countries through reducing the technical and skilled workforce. The socio- economic and socio- technological development of a country is primarily based on the availability of skilled sand qualified human capital (Smith & Todaro, 2006). The developing countries bear the loss of investment cost on its human capital that move out of the country. Further, migration creates skilled and technical labour shortage that ultimately impedes the economic progress of that country.

The core purpose of this research is to discover the factors (push and pull) stimulate the phenomenon of brain drain in education sector institutions (universities) of Pakistan. As higher education sector is a center for creation of knowledge, ideas and skill development, hence can help in expediting economic progress. If universities are affected by the brain drain than the research and teaching would be adversely affected

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which would adversely affect the national development by depriving it of its human capital. The research study focuses on the public sector universities of Khyber Pakhtunkhuwa (KP) as an area unexplored by the researchers to investigate the factors causing the Brain Drain among faculty members.

Objectives
   i). To examine the factors affecting Brain Drain among the faculty members of Khyber Pukhtunkhwa, Pakistan
   ii). To test hypothesis if *Family* and *Job Placement* helps in Reversing Brain Drain
   iii). To test hypothesis if *Financial Constraints, Political Instability* leads to Brain Drain
   iv). To test Population Data Parameters using normality tests of sample data collected for the study

Literature Review
The phenomenon of Brain drain (BD) is the "migration of skilled human resources in search of better living standard and quality of life, higher salaries, access to advanced technology and more stable political conditions in different places worldwide for trade, education, etc" (Dodani & LaPorte, 2005). Many researchers investigated the phenomenon and explained its causes (Neil, 2003; Adefusika, 2010). Studies found "Push and Pull" factors the main driving forces that led to migration of skilled workforce (Lee, 1966; Milio et al, 2012).

In order to reverse the brain drain of Taiwanese students Taiwanese government formed National Youth Council in 1970s. The council formed a database of migrants, offered overseas employments, and temporary job placement to graduates. These all steps were taken for reversing the brain drain (Neil, 2003). Analyzing different countries' cases in respect of brain drain, Family influence was considered to be a factor that stimulate brain drain (Adefusika ,2010). Research revealed that brain drain apart from its demerits, positively affect the sending country in terms of importing technology to the home country as well as upheaving the living standard of families in the form of remittances (Easterly & Nyarko, 2008). However, Faini (2006) through empirical investigation proved that affluent migrants remit less than poor migrants to support their family as they had enough financial resources to bring their close family members to host countries.

Political instability is another factor considered to be a major contributor to brain drain. Some studies included it as a negative socio-economic factor along with poor infrastructure and inefficiency of the government (Lambsdorff, 2006; Ko and Samajdar, 2010). Similarly in a study conducted on African continent political instability was identified

as one of the influential factors for migration of skilled workers (Ong'ayo, 2008). Access to financial resources is a prime reason for migration of skilled workers. Hence, due to the reason included as a policy item in the European Union resolution on migration of skilled workers and its effect on national development (ACP-EU, 2007).   In another study of migration and remittances it had revealed that due to financial constraints in less developed nations comparatively much affluent people migrate to developed countries.

Method
Methodology adopted for the research study involved contacting those faculty members that were studying abroad and were pursuing higher education in various fields of advanced studies from public sector universities of KP. As they were already studying abroad thereby they were contacted through emails as well as live conversations in some cases using Skype and Yahoo Messenger to help them understand the purpose as well as the nature of the study.

Sample and data collection process
Faculty members studying abroad were on their academic leaves and they were fully funded by the Higher Education Commission (HEC) and they were estimated to be one hundred and fifty in total during year 2014-2015 from KP, the same figure stood as the Sample Frame for the study in hand. As the research study is a part of a large scale research, therefore, to analyze the response of a small sample, 30 respondents were randomly selected out of the total responses received.

Hypothesis
In order to test the assumptions that a number of factors contribute as vital factors that are helpful in reversing brain drain and leading to brain drain phenomenon a number of hypothesis were developed as below;

  H01: Family does not motivate long term return to Pakistan
  H11: Family motivates long term return to Pakistan
  H02: Job placement does not lead to long term return to Pakistan
  H22: Job placement leads to long term return to Pakistan
  H03: Financial constraints do not discourage long term return to Pakistan
  H33: Financial constraints discourage long term return to Pakistan
  H04: Political instability does not discourage long term return to Pakistan
  H44: Political instability discourage long term return to Pakistan

Data analysis

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group.   It is considered to be a measure of scale reliability. A "high" value for alpha does not imply that the measure is one-dimensional (for one construct. Cronbach's alpha is not a statistical test - it is a coefficient of reliability (or consistency). In general a reliability coefficient of .70or higher is considered *acceptable* in most social science research situations.

Reliability Statistics	
Cronbach's Alpha	N of Items
.900	4

Assumptions of normality

These assumptions are usually used for defining parameters and it shows to what extent the data is normally dispersed. There are several tests of normality which are used in researches.

Skewness and Kurtosis

The acceptable situation is when the value of Skewness be in ±2 while Kurtosis in ±7.

Shapiro-Wilk's W test

The other form of normality test is Shapiro-Wilk's W test but it is not always fulfill the assumptions for normality.

Kolmogorov-Smirnov test

K-S test is also one of the tests for normality but it is also not always fulfill the assumptions for normality.

Q-Q plot

Q-Q plots test is also used for testing normality assumptions. The observed and expected values are plotted on graph and deviation in plotted values shows that the data lacks normality in distribution.

Shapiro–Wilk test: The Shapiro–Wilk test

It is a test of normality in frequent statistics. The Shapiro–Wilk test utilizes the null hypothesis principle to check whether a sample came from a normally distributed population. The null-hypothesis of this test is that the population is normally distributed. Thus if the p-value is less than the chosen alpha level, then the null hypothesis is rejected and there is evidence that the data tested are not from a normally distributed population. On the contrary, if the p-value is greater than the chosen alpha level, then the null hypothesis that the data came from a normally

distributed population cannot be rejected. E.g. for an alpha level of 0.05, a data set with a *p*-value of 0.02 rejects the null hypothesis that the data are from a normally distributed population. However, since the test is biased by sample size, the test may be statistically significant from a normal distribution in any large samples. Thus a Q–Q plot is required for verification in addition to the test thus the Q-Q plot obtained below.

Tests of Normality[b]

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Family-Family motivates long term return to Pakistan	.282	30	.000	.810	30	.000
Job Placement-Job placement leads to long term return to Pakistan	.339	30	.000	.818	30	.000
Financial Constraints	.320	30	.000	.794	30	.000
Political Instability	.265	30	.000	.768	30	.000

a. Lilliefors Significance Correction

Kolmogorov–Smirnov test
Kolmogorov–Smirnov is a nonparametric test of the equality of continuous, one-dimensional probability distributions that can be used to compare a sample with a reference probability distribution (one-sample K–S test).

Descriptive Statistics

Statistics

		Family	Job Placement	Financial Constraints	Political Instability
N	Valid	30	30	30	30
	Missing	0	0	0	0
Mean		3.57	3.47	3.70	3.70
Std. Error of Mean		.270	.218	.250	.284
Median		4.00	4.00	4.00	4.00
Std. Deviation		1.478	1.196	1.368	1.557
Variance		2.185	1.430	1.872	2.424
Skewness		-.757	-.888	-.884	-.812
Std. Error of Skewness		.427	.427	.427	.427
Kurtosis		-.869	-.161	-.556	-.946

Std. Error of Kurtosis	.833	.833	.833	.833

Table 1 Results of One-sample t-test and Descriptive Statistics for Family, Job Placement, Financial Constraints and Political Instability

One-Sample Test

	Test Value = 3					
					95% CI for Mean Difference	
	t	Df	Sig.(2tailed)	M	Lower	Upper
Family	2.100	29	.045	.567	.01	1.12
Job Placement	2.138	29	.041	.467	.02	.91
Financial Constraints	2.802	29	.009	.700	.19	1.21
Political Instability	2.463	29	.020	.700	.12	1.28

$p < 0.05$

Discussion

Reliability statistics included Cronbach's Alpha 0.900 which shows that the internal consistency and reliability of the scale was good enough to be used for collecting data. While considering the data normally distributed, a number of tests were conducted that included the normality tests of Shapiro-Wilk (SW) that helped to estimate the very close estimation of the data distribution for the study as well as the normality of the data collected for true representative sample. Moreover Q-Q plots helped visually show the data distribution as normal as the spread was much closer to the normal distribution path. Moreover the descriptive table included mean and median showed the possibility of normal distribution with little variation.

As the p-values obtained are smaller than alpha values of 5% thereby we failed to accept the null and accept the alternate hypothesis. To be more elaborative and expressive we compare t-values using the t-test for the appropriate significance level and degree of freedom. If our calculated t-values > t-table values (2.045), we reject the null hypothesis and accept the alternate hypothesis. This can help us understand the mechanics of the occurrence of the whole phenomena of preventing and reversing brain drain among the unit of observations. Respondents chosen for the undertaken study were attracted to their families and were interested to come back to their home country as they needed emotional support and ways to know about their families and their affairs so that they can get the desired social satisfaction and the peace of their minds. Their second priority or point of attraction was their immediate job placement in their home country. They seemed to be more hopeful to get

jobs once return to their home country but at the same time they were reluctant to give up their existing lifestyle for an unpromising lifestyle back in home country. The thing that leads to drain the brains was the financial constraints that most of the brains faced with such compromising economic factors as that of falling value of rupee and the grade based salaries that often result in only sustaining the lives without making real life progress with growth and development for the respondents. Lastly, the unstable political setup of the state leads the brains to drain in one way or another. Comparing living standards of a society with fear of unknown and mental torture and non transparent procedures, with those of advanced societies where merits are always considered the priority as a rule and the procedures are human friendly and not machine friendly. Such factors convince brains to drain and lead the state of brain shortages and real progress for the state to face its repercussions both short term and long term.

Significance of the research
The research acts as guidelines for the Government and public policy makers to chalk out a viable strategy for preventing and reversing the brain drain of students. Such outflow of students should be taken seriously as it deprive of the country from its valuable human capital.

Limitations of research
There are some limitations of this study as it does not encompass several other factors such as Academic Pull factors which need to be investigated as future research. Besides, the return intentions of Pakistani students ought to be inquired for further insight.

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