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Demographic Prediction towards Leadership and Innovation in Healthcare Services

Zakeer Ahmed Khan_PhD Dr. Allah Nawaz Irfanullah Khan_PhD
Department of Public Administration, Gomal University, Dera Ismail Khan

Abstract
A multi-source approach has been adopted to collect survey data from health professionals serving in district level hospitals located in seven districts of Khyber Pakhtunkhwa (KP) province of Pakistan. As the design of research of the present study is quantitative-cum-qualitative, so, for the purpose, both statistical and textual facts have been mustered and analyzed by deploying inferential and descriptive tools. To rationalize the contextual and qualitative facts and figures, the thematic analysis was applied by using argumentation while for the quantitative and field data, the statistical tools were applied. Altogether, the analysis revolves around the idea of recognizing and computing the role of leadership and personal factors on the innovation of services providers in the health system of KP. All these variables have been extracted from the existing relevant literature and then transformed into a theoretical framework/research model. Different tools and tests were used to investigate the relationship between leadership and health services while mediating the personal attributes (demographics).

1. INTRODUCTION

It is imperative to examine whether in resource-constrained countries like Pakistan, where more emphasis needs to be laid on apt deployment of resources with focus on efficiency/positive outcomes, transactional leadership styles suits more or the transformational one. Pakistan is confronted with complex challenges ranging from security crises to economic dilapidation, unlike other developing countries in the region (Amabile, Schatzel, Moneta & Kramer, 2004). Therefore, on one hand, leadership will have to mobilize all available potentials through application of all attributes of transformational leadership while at the same time cannot afford mismanagement and under-utilization of potentials through blind application of excess hit and trial experimental model. Under such circumstances, a fine balance is required to be established with regards application of various leadership styles aimed at gaining sustained efficiency through promotion of innovative environment in multidimensional services sector (beyond health services) and that must be the topic for further research (Axtell, Holman & Wall, 2006).

World is passing through an age of diffusion of skills and knowledge and hyper-competitiveness is omnipresent. Cultural dimensions and social transformation trends reflect non-linear pattern of change. The shifting trend from protectionism to free market economic system has now taken a reverse course. A need is felt to expand the scope of research by considering a complex leadership model which may incorporate all attributes forming part of Full Range Leadership model and some others which may emerge with technological sophistication (robotics, artificial & intelligence) and transforming managerial patterns with specific focus on organizational change (De Jong & Den, 2007).

It is very essential to note that we did not focus much on implementation of hospital IT innovation. IT-based system not only facilitate the patients by providing better, speedy and quality healthcare but also help controlling waste of financial resources, due to extensive spending on labor intensive systems and other related issues. However, at present, ambiguity exists on cost-benefit matrix particularly at senior leadership level in healthcare sector. Future research should therefore, take a macro-perspective to understand whether the investments in healthcare IT as a whole bring both quality of care benefits to patients and financial benefits to the organization (Baker & Denis, 2011).

There is a dire need to identify the bond between health system and employees in terms of conceptual framework of the leadership and its demographics. The related literature to health system shows a number of variables which determine the leadership. Some of these are; experience, designation, gender, age used as demographic variables. In the same way, if the leaders are well satisfied demographically and develop high degree of leadership with their system then they will more likely to be loyal to their profession (Rast, 2012). The demographic characteristics of the individuals are used most commonly variables relative to leadership, although some studies have found inconsistent results.

2. LITERATURE REVIEW

The relevant literature revealed that the effect of variables (demographic) were secondary over work rewards and work values. However, in some studies it was found that demographic variables comprising the gender, age, designation, experience, qualifications and marital status play a significant role in improving the leadership and creativity of the employees while the study of (Zakeer, Khokar & Irfan, 2014) found no important association

between these variables. Below is the discussion on these variables:

2.1 Age of the Subjects

Most of the studies have consistently found that age of the employees is positively correlated to leadership while negatively correlated with innovation and climate for change (Price & Mueller, 1981). Likewise, Sager & Johnson (1989) have reported that unlike younger employees, older employees have been found with greater level of leadership. The findings of the Karch et al., (2005) are also consistent because they additionally perceived that younger employees are more expected as good leaders as matched to older ones as typically they have routine jobs, less participation in decision making, less pay and lack the knowledge about their jobs. Likewise, Steijn & Leisink (2006) have found that age is unrelated to leadership, however, in terms of their career commitment, they reports that, older employees are expected to have touched the plateau of their professional careers. Therefore, "they become less loyal to their professional careers in contrast to the younger employees" (Irfan et al., 2013).

2.2 Gender of the Respondents

Regarding the gender based perception; the cultural traits of the society have a strong influence upon the leadership. In the developed countries, in this regard, the working atmosphere is completely diverse as compared to those wherever the social, cultural and economic state of affairs is still in the hopeful phases. The study of (Mowday et al., 1982) has found inconsistent and weak relationship between the gender and leadership. Whereas, Mathieu & Zajac (1990) found a weak correlation between gender and leadership, while female are being more loyal to the institution than male. McElroy (2001) declares that "as women have had to overwhelm more hurdles to realize their positions in the system, so they place better value to their system and jobs in contrast to their male fellows". It is perceived that the graph of leadership and management between the females comes down as they are busier in their household lives. Conversely, if the chances appear, the males are more susceptible for leadership (Blankenship, 2010).

2.3 Designation of the Subjects

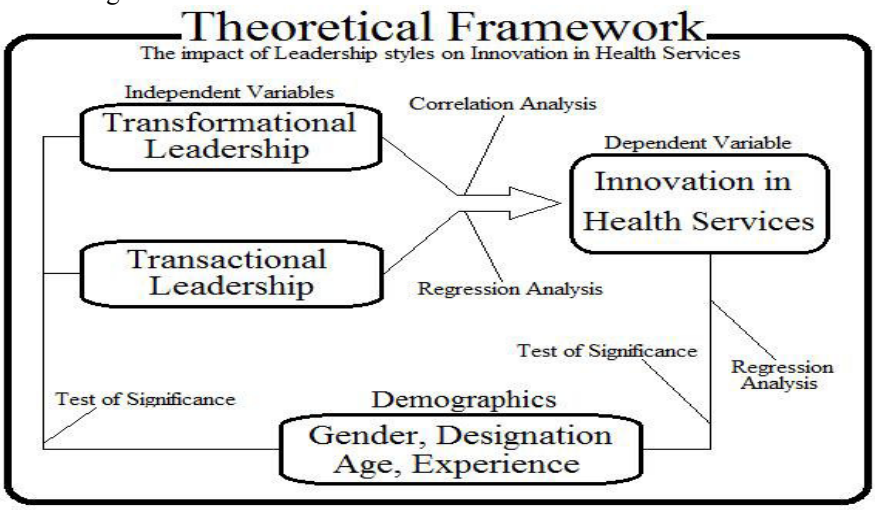
It has been observed in many cases that the health professionals with advanced experience, skills and qualifications are not contracted pay packages proportionate to their said capabilities. "Consequently, these people look around for better opportunities and entertain any offer which is more lucrative and beneficial for their professional career whatsoever". In any health system, the official position of an employee is directly associated with his/her professional stability. The designation of an employee, in this regard, has a main standing in the phenomenon of the leadership. The occupational groupings of the employees significantly influence the leadership (Park & Rainey, 2007). The basic responsibility of the physicians is teaching and research, and sometime administration and management too. On the basis of their education, Page (1998) has distinguished professional groups into two classes, orientation and goals to their profession and the system. "Research needs to investigate the special effects of demographic variable like job designation, which can also directly or indirectly influence the leadership in the health system" (Irfan et al., 2013).

2.4 Experience of the Subjects

During the age of individual`s professional tenure/career, the expertise acquired is the experience she/he possesses. The related literature revealed that the experience has a diverse response when examined regarding the leadership. "In some cases, the highly experienced employees prefer to continue their career in the same system for a longer period and hesitate to leave the system" (Nawaz & Kundi, 2010). It has been observed that the experienced employees are emotionally attached, passionate and dedicated with their concerned organizations. "Some of them, those who hold the positions which are at par to their qualifications coupled with fringe benefits, prefer to leadership and deliver in the system" (Ucho et al., 2012). In the same line, the health system has a strong role in retaining the proficient employees by enhancing their sense of leadership. "The high ups award higher positions, bonuses, increments and other benefits to such employees in lieu of their higher leadership" (Irfan et al., 2013).

2.5 Theoretical Framework

Figure 2.1 Schematic Diagram of the Theoretical Framework



3. RESEARCH METHODOLOGY

3.1 Approach

The survey is based on extensive consultation of the existing literature dealing with leadership and innovation and field study incorporating input from the individuals forming sample. However, practically it appears impossible to study the whole range of literature. Moreover, sampling was employed as representative of the population since time and resources did not permit that cumbersome effort. The study was exploratory cum testing of hypothesis based on literature review and field testing.

3.2 Population & Sampling

3.2.1 Study Population

The universe or population is the entire group of items in which the researcher is interested and wishes to plan to generalize. It is a gathering of all the elements is a population in which the researcher studies and about which he/she trying to draw decisions. The total collection of elements is the population (players, citizens, universities, doctors, accountants) about which we wish to make inference based on sample information (Weiers, 1984, p. 102).

3.2.2 Sampling & Sample

In this research project, the population of interest consisted of all the „Health Professionals" from the districts Dera Ismail Khan, Tank, Lakki Marwat, Bannu, Kohat, Mardan and Pashawar, Khyber Pakhtunkhwa, Pakistan. About a large group, a common practice is the sampling and on the basis of a small portion or sample, everybody is used to draw conclusions (Boyd et al., 1977. p. 301). "The process of sampling is the selection of an appropriate number of elements from the population so that by taking the sample and understanding the properties or characteristics of the sample subjects, it would be probable to simplify the properties or characteristics to the population elements" (Sekaran, 1999, p. 268).

A pilot study was conducted to test the questionnaire (instrument), by picking out 30 respondents from Dera Ismail Khan and finding the data (statistics) using the standard formula for tabulating the sample size. A sample of 204 was selected from finite population by using the formula for the selection of sample size (see Table 3.1 below).

Table 3.1 Pilot Study Statistics use for Sample-Size Determination

z-Score	SD	E	N	n
1.96	0.072	0.0081	620	203.8

3.3 Data Collection Methods

3.3.1 Literature Survey

The research predictably includes the usage of the periodical, pamphlet book and documented resources in public library and HEC website. Apparently, lacking this primary orientation, no research study can be commenced. "Nor should one be undertaken without knowledge of the research that has already been done in the field" (Goode & Hatt, 1952, p. 103). Through available data, the literature survey is basically a primary search.

3.3.2 Field Survey

Field Study: From the wide literature survey, a designed instrument (questionnaire) was organized by first taking out the variables and their attributes. The questionnaire included the demographic and research variables. There were four (4) demographic variables whereas the research variables are the leadership, innovation and the health services. To record the responses, a 5-point Likert scale was used. About 204 questionnaires were distributed however, after a lot of hard work, the researcher succeeded in recollecting 185 filled questionnaires thereby getting a return rate of 90.68%.

3.4 Tools for Data Analysis

To the entire empirical world, science is a manner of approach. To state the suggestions in the form of 'if-then', it is a method of inquiry which enables the researcher to conduct scientific research. About the analysis, two types of questions may be raised. One of them relates to the techniques of representing the data and the other to the methods of logically ordering them so that questions can be raised and answered (Goode & Hatt, 1952, p. 343). The research is simply the process of finding solutions to a problem after a thorough study and analysis of the situational factors (Sekaran, 1999, p. 2).

3.4.1 Descriptive Tools

Descriptive Tools: The examples of descriptive statistics are the graphs, charts and tables that display data so that they are at ease to realize (Levin, 1984, p. 4) thus, to represent descriptive data, the researcher has used different charts and tables about the respondents‟ input along with the variables used to examine the attitude of the respondents. “To present the grouping of the respondents, according to their demographic attributes”, cross tables have been used. In the same way, “a descriptive table is given, showing the standard deviations means and other data about the research variables”.

3.4.2 Testing of Hypotheses

To test the hypotheses, the researcher has also used inferential tools. To test the hypothesis, about the relationships between the researches variables, multiple tools have been applied, the demographic attributes of the respondents as well as the relations between the researches variables themselves. Following tools have been applied:

1. Regression analysis (Multiple Regression & Stepwise-Regression)
2. Tests of Significance (t-Tests & ANOVA applications)

4. EMPIRICAL FINDINGS AND DISCUSSIONS

4.1 Descriptive Findings

Table 4.1 Cross-Tabulation of Gender & Designation

	Groups	Gender		Total
		Male	Female	
Designation	Medical Officer	58	14	72
	Senior Medical Office	28	29	57
	Principal Medical Office	35	21	56
Total		121	64	185

Table 4.2 Descriptive Statistics on Research Variables

	N	Min	Max	Mean	Std. D
Transformational leadership Style	185	1.27	5.00	3.0551	.70242
Transactional leadership Style	185	1.80	4.50	3.5319	.47835
Innovation in Health Services	185	1.62	4.77	3.3709	.61201
Experience	185	1	35	14.91	9.336
Age	185	4	60	42.07	10.236

Hypothesis 1: All demographics predict Change in the Criterion Variable (H_1).

Table 4.1a Model Summary of Regression (Demographic & Criterion Variable)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig
1	.156a	.024	.003	.61116	1.127	.345[a]

Table 4.2b Coefficients of Regression (H_1)

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta		
1	(Constant)	3.511	.291		12.071	.000
	Gender	-.108	.095	-.087	-1.136	.258
	Designation	.000	.072	.000	.003	.997
	Experience	-.008	.012	-.115	-.623	.534
	Age	.000	.010	.004	.026	.979

Analysis
Only 2 % change in Innovation in Health Services is explained by Demographic variables, which is obviously ignorable, rather, meaningless. Similarly, no significance exists as explained by the table of coefficients.

4.2 Examining Mean-Differences of Demographic Groupings
A. Gender Impacts on Responses
Table 4.3a Group Mean Differences on Gender Variable

	Gender	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Transformational Leadership Style	Male	121	3.0766	.74375	.06761
	Female	64	3.0146	.62035	.07754
Transactional Leadership Style	Male	121	3.5554	.48716	.04429
	Female	64	3.4875	.46171	.05771
Innovations in Health	Male	121	3.4164	.61005	.05546
	Female	64	3.2849	.61120	.07640

From the Table 4.3a of descriptive statistics on the groups generated through gender-variable, the emerging hypothesis for the test is:

Hypothesis 3: Males are Scoring Higher than the Females (H_3).

Table 4.3b t-Tests Applications on Gender Group Differences

TEST-VARIABLES		**F**	**Sig.**	**T**	**df**	**Sig. (2-tailed)**
Transformational Leadership Style	EVA	.883	.349	.570	183	.569
	EVNA			.603	149.764	.548
Transactional Leadership Style	EVA	.002	.969	.918	183	.360
	EVNA			.933	134.547	.353
Innovations in Health	EVA	.132	.717	1.394	183	.165
	EVNA			1.393	128.198	.166

Legend: EVA = Equal Variance Assumed & EVNA = Equal Variance Not Assumed

Analysis
1. We shall examine the Cause and Effect Relationship between Gender and Innovation in Health services through examining Group Mean difference. Here, we have applied independent samples „t-test" (opinion of 2 groups on 3 variables).

2. Descriptive data says Males are scoring higher than Females or Females scoring less than Males.
3. Since *p-value* on all three tests is far more than the critical threshold of 0.05, therefore, the descriptive differences are not significant meaning that they don"t represent parameters.

B. The Role of Designation in Changing the Response

Table 4.4a Group Mean Differences on Designation Variable

Grouping Variables	Groups	N	Mean	Std. D	Std. E
Transformational Leadership Style	Medical Officer	72	3.2648	.69696	.08214
	Senior Medical Office	57	2.9006	.64033	.08481
	Principal Medical Office	56	2.9429	.71480	.09552
Transactional Leadership Style	Medical Officer	72	3.5264	.54437	.06415
	Senior Medical Office	57	3.5614	.43209	.05723
	Principal Medical Office	56	3.5089	.43746	.05846
Innovations in Health	Medical Officer	72	3.4615	.63838	.07523
	Senior Medical Office	57	3.2874	.58574	.07758
	Principal Medical Office	56	3.3393	.59887	.08003

The Table 4.4a shows that Medical Officers are scoring higher on two variables therefore we can hypothesis that group 1 is different from the other two groups. The hypothesis will:

Hypothesis 4: Medical Officers have greater Score than other Groups (H_4).

Table 4.4b ANOVA Applications on the Designation-based Groups

Test-Variables		Sum of Squares	df	Mean Square	F	Sig.
Transformational Leadership Style	Between Groups	5.233	2	2.616	5.566	.005
	Within Groups	85.551	182	.470		
	Total	90.784	184			
Transactional Leadership Style	Between Groups	.081	2	.041	.176	.839
	Within Groups	42.020	182	.231		
	Total	42.102	184			
Innovations in Health	Between Groups	1.044	2	.522	1.400	.249
	Within Groups	67.873	182	.373		
	Total	68.918	184			

Analysis

1. Since three groups are involved, therefore, technically, we have to apply ANOVA to examine the existence of group means differences.
2. Out of three groups, medical officers group seems scoring higher as per Descriptive Table. Their

opinion of Transformational Leadership is different. The result shows that there is the impact of designation because the statistics on Transformational leadership style are emerging as significant.

C. The Role of Experience in Changing the Response

Table 4.5a Mean Differences of Groups from Experience

	Experience	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Transformational Leadership Style	>= 15	81	2.9827	.72746	.08083
	< 15	104	3.1115	.68047	.06673
Transactional Leadership Style	>= 15	81	3.5864	.42800	.04756
	< 15	104	3.4894	.51217	.05022
Innovations in Health	>= 15	81	3.3314	.58780	.06531
	< 15	104	3.4016	.63132	.06191

The Table 4.5a shows that the groups based on the Experience of the respondents. It shows that those with Less than 15 years of experience have higher scores than the other group so the hypothesis will be phrased as:

Hypothesis 5: Medical Officers have greater Score than other Groups. H_5

Table 4.6a t-Test Applications on Experience-based Groups

		F	Sig.	t	df	Sig. (2-tailed)
Transformational Leadership	EVA	2.066	.152	-1.239	183	.217
	EVNA			-1.229	166.229	.221
Transactional Leadership	EVA	4.907	.028	1.372	183	.172
	EVNA			1.402	182.062	.163
Innovations in Health	EVA	.965	.327	-.773	183	.440
	EVNA			-.780	177.220	.436

Legend: EVA = Equal Variance Assumed & EVNA = Equal Variance Not Assumed

Analysis

The group less than 15 years of experience is scoring higher than the other groups. In independent sample tests it appears that experience has no role whatsoever, in the opinion of respondents about all three research variables.

D. Impacts of Age

Table 4.6a Descriptive data on Age-based Groups

	Age	N	Mean	Std. Deviation	Std. Error Mean
Transformational Leadership Style	>= 42	91	2.9538	.69586	.07295
	< 42	94	3.1532	.69844	.07204
Transactional Leadership Style	>= 42	91	3.5451	.43824	.04594
	< 42	94	3.5191	.51625	.05325
Innovations in Health	>= 42	91	3.2722	.59632	.06251
	< 42	94	3.4664	.61495	.06343

The above table reveals that the group with „Equal to or More than 42 years" is scoring lower than the other group. So the emerging hypothesis will be:

Hypothesis 6: Respondents with >=42 year Experience have Lower Scores. H_6

Table 4.6b Statistics from t-Test Applications

Test-Variables		**F**	**Sig.**	**t**	**Df**	**Sig. (2-**
Transformational Leadership Style	EVA	.164	.686	-1.944	183	.053
	EVNA			-1.944	182.847	.053
Transactional Leadership Style	EVA	3.828	.052	.367	183	.714
	EVNA			.368	179.952	.713
Innovations in Health	EVA	.108	.742	-2.180	183	.031
	EVNA			-2.181	182.999	.030

Legend: EVA = Equal Variance Assumed & EVNA = Equal Variance Not Assumed

Analysis

1. Respondents with age group less than 42 are scoring high, thus, confirming the hypothesis.
2. Results of the test indicate that the hypothesis is true on only one variable i.e, Innovation in Health Services, while hypothesis is rejected on rest of the two variables. Therefore, the hypothesis is partially accepted.

Prediction by the Demographic Attributes

R2	Coefficients of Regression			
0.024	**Gender**	**Designation**	**Experience**	**Age**
2% Change	0.258	0.997	0.532	0.979

Table 4.7 Summary of Group Mean-Differences

Test-Variables	Gender	Designation	Experience	Age	Summary
Transformational Leadership	0.569	**0.005**	0.217	0.053	1
Transaction Leadership Style	0.360	0.839	0.172	0.714	0
Innovations in Health System	0.165	0.249	0.440	**0.031**	1
Summary	0	1	0	1	2

Furthermore:

1. There are differences between technological and managerial innovations.
2. The technological innovation is expected from the transactional while managerial innovations are the domain of transformational leaders.
3. As per empirical results of the current study „Juniors" health managers have appeared more transformational leaders than the other groups. In the test of significance on the groups based on designation, the medical officers [MO] support transformational style more than senior medical [SMO] and principle medical officer [PMO].
4. At the moment we are living in a „Global-village" that is fueled by knowledge and inhabited by an „Information-society" therefore, need „Knowledge or Learning organizations who can keep the pace with changing work environments. The paradigm is now shifting to physical industries to knowledge industry for getting any economic, political edge over the others or to become the big boss all at global, national, local, organizational and group levels. Superpowers of the moment are more knowledge workers with knowledge industries far more developed and advanced than the traditional industries. To stay alive and active, Pakistan is also making efforts to catch up with digital revolution in health sector.

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