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Paradigm Shift: Robust Response of Reinventing Government Movement to New Public Administration Using Econometrics

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Abstract

This paper focuses on the paradigm shift from a traditional government into a new public administration using quantitative economics in testing the robust response of the shift. Though, we follow the conception of Frederickson (1991); Behn (1995) and Kirlin (1996), we are not concerned of the body of knowledge in such transformation, rather we are concerned on how to offer foundational base of quantitative literature for planning and implanting of the new public administration in Afghanistan for the purpose of which, we use a set of cross – sectional data obtained through an objective questionnaire from 221 targeted public employees in Kabul City and using a set of statistics and econometric models in testing the competing hypotheses. The results show that all the identified proxies in measuring the variables associated with the shift process are highly significant and support the robust response towards the stated shift to the new public administration in the country.

Keywords: paradigm, GDP, public administration, governance, shift

1. Introduction

Since 1980s, the public administration has moved towards a more managerial framework which devolves policy implementation of a government in a democratically maintained environment (Chevalier, 2006). The trend in movement towards effective and productive public administration involves both the government and the citizens in exploring and possessing required knowledge areas, skills and capacities. Denhardt (1999) explore five key evolving challenges in this movement such as 1) new knowledge and technological innovation 2) the emergence of post-industrial economies and structures of governance 3) the increasing integration and globalization 4) demographics and socio-cultural shifts towards more and more diversity and potential conflicts and 5) an erosion of confidence in traditionally structured institutions. On the other hand, Post WWII advance and expansion of comparative public administration scholarship was stimulated by contribution from scholars whose intellectual pursuits reached beyond the national boundary of one country and who managed to bridge the division between administration and politics (Gray & Jenkins, 1995).

Following the conception of Frederickson (1991); Behn (1995) and Kirlin (1996), in this research, we focus on the currently challenging paradigms of public administration with regards to policy implementation from lower to higher level such as micromanagement, motivation and measurement to empirically develop a rational coefficient for the shift and its level of impact in a quantitative approach.

The originality of this study is based on its modelling to quantify the robust response of the paradigm shift in public administration. So far, many have attempted to present to qualitative prominence of the paradigm shift but there is yet none on quantitative approach.

1.1 Statement of Research Questions

Though, transition of traditional to systematic and generally accepted principles of public administration in Afghanistan has been the central attention of both the government and civil society from last 15 years and substantial efforts have also been put together; the major paradigms of the public administration herself is still under question. Drawing from the work of Behn (1995: 315) in this research the following questions are raised:

Question 01: Micromanagement: How can public managers break micromanagement cycle – an excess of procedural rules, which prevents public agencies from producing results which leads to more procedural rules?

Question 02: Motivation: How can public managers motivate the people both government employees and service recipients to work energetically and intelligently towards achieving public objectives?

Question 03: How can public bodies measure the achievements of their agencies in ways that help to increase those achievements?

1.2 Research Hypotheses

Keeping the research questions in mind, the following alternative hypotheses are developed to be tested in this research:

H_1: Government movement exhibits robust positive response to paradigm shift;

H_2: Paradigm shift offers negative coefficient for excessive procedural rules;

H_3: The reinventing government movement has a long-run memory to market approaches for the provision of public services;

H_4: The reinvention of government movement has a long-run memory with mechanisms for individual choice rather than aggregate public choice.

In light of the standard presentation of a research, the rest of this study is organized as follow: section two offers the literature review underlying philosophical ontology, epistemology and the methodology to avail both scientific and philosophical aspect of the study; section three presents the research data and models; section four reiterates the analysis of data collected from the population of study; section five presents the discussion on finding by testing hypothesis and offering the results while, section six is the last part and concludes the paper. Finally, we provide the list of references and an appendix on extra calculation, estimation and information to support our claim and propositions.

2. Literature Review

> "Theories underpin social sciences endeavor by providing the philosophical assumptions about what constitutes social reality (ontology), what is accepted as valid evidence of that reality (epistemology), the means by which the context is investigated (methodology), as well as the manner in which evidence is gathered (methods). Both positivists and interpretivists generally concur that theory place a central role in scientific inquiry into the social world…" (Gerrit, 2017).

The literature that underpins this study is presented into four different parts: 1) Theoretical Background, 2) Methodology and its Implication, 3) Philosophical Epistemology, and 4) Philosophical Ontology to avail both the scientific and philosophical aspect of the current study.

2.1 Theoretical Background

Literally, the public administration is the set of interdisciplinary theories and practices that are designed to promote the understanding of relationship between the government and the society. Though, different authors and scholars raise the arguments on the public administration to be more practical-based approach relationship, few others believe that such relationships are based on the maturity of its relevant theories (see for instance, (Anderson, 2002; Finkelman et al., 2006; Shafritz & Hyde, 2004).

Lungu (1997) believes that in some cases, public administration is used synonymously with public policy, public service and government administration. His analysis of public administration as opposed to public policy could be based on the fact that public administration in practice is entrenched within public policy formulation and its management, structuring and policy interventions by the re-structuring of the public service in order to deliver services efficiently and effectively to the public. Additionally, public administration ensures that government structures are structured properly and according to the legal framework to obtain and maintain good governance.

Intensified globalization, especially the necessity to learn more about how administrative reforms work effectively in different cultural contexts, requires public administration research to embrace comparative perspectives (Fitzpatrick et al., 2011) while issues of rationality, methodology, and epistemology are more important in the new public administration and policy implementation than in the reinventing government movement (Frederickson, 1996) though, the existence of any theoretical foundation necessitates a rational movement towards a comparative reconstructed paradigm of the public administration (Heady, 1960).

Newland (2000) argues that facilitation of connectedness of a comparative paradigm is a fundamental role for Public Administration in effectively implementing the public policies. Being democratic on one hand and the promoter and implementer of an open market economy on the other hand, the traditional conception of governance and maintenance of relationship between the private sector and those of the public is in the extreme doubt. Hence, it is argued that governance without government is becoming the dominant pattern of management for advanced industrial democracies (Peters, 1998).

At this time, it seems certainly that new public management is a new paradigm for public administration (to implement the public policies by a managerial approach) and that it will sweep all before it in its triumphal recasting of the nature of the discipline in theory and practice (Osborne, 2006) (Note 1).

O'Toole (1986) reviews more than hundred articles of policy implementation and identifies more than three hundred significant variables in the implementation of policies where such variables need effective shifts towards structuring. To the possible extent, we also use some of the stated qualitative variables by measuring them through the proxies.

2.2 Methodology and Its Implications

Schofield (2001) notes several key procedural issues in implementing the public policies such as 1) the roles of knowledge and learning in policy implementation; 2) the processes of policy implementation; 3) the role of actors and agents in implementation; and 4) the role of bureaucratic discretion while, Mosse (2004) criticizes the practical implementation aspect of the model and invites further studies to cover models and their implementing implications. Realistic approach to shift in the public administration paradigms has been the central themes of many research papers and articles where critics raise on the uniqueness, synthesizing, amalgam of organization theory, management science and the concept of public interest (Henry, 1975).

Lan & Anders (2000) argue that the debate on whether there is an intellectual core in public administration is becoming less relevant and what is more important from this point on is public administration scholars' self-consciousness and better articulation of these existing paradigms. There is no government which lacks administrative paradigms of either traditional, systemized or post-modern type (Cunningham, 2007) that need theoretical reconstructive attempts to suit best practicality in relation to socio-cultural perspectives.

The strength of the public administration is in its exploration of the essentially political nature of public administration, policy implementation and of the complexities and nuance of the public policy making process (Osborne, 2006) where upholding such strengths call for shifting in paradigms to suit theory and practice (Pesch, 2008). Extensive literatures are now available that support the shift in paradigms and the cluster of public administration to lead in effective and efficient public service (see for instance, Dupont et al., 1995; Crosby, 1996; Lynn, 2001; Spillane et al., 2002; Grunig, 2009; Lu, 2013).

Turning focus on the economic effect of the shift to new public administration, there are sheer number of evidences presented by scholars like Tadelis & Williamson (2012); Williamson (2010); Saxena (2005) Williamson (2000) Leiblein (2003); Paavola & Adger (2005) who qualitatively synthesis the prominence of shifting the public administration in favor of transaction cost economies where the recipients and the public at large shall benefit, while the quantitative approach in documenting the robust response of such shift and its significance is overlooked.

Gereffi, Humphrey, & Sturgeon (2005) offer a theoretical framework the governance patterns in global value chains while, they ignore the practical implication and the facilitating the contextual application of the shift.

2.3 Philosophical Epistemology

From Klijn (2008) who argues that increasing attention is being paid to the application of complex system theories in the social sciences; though, this trend is less prominent in the field of public administration and policy implementation. Getting back to our research questions raised, James (2004) notes on epistemological context of the policy implementation in relation with the public administration and states that there are at least three epistemological questions that need clear answers and they are 1) what shall be done: that is, who shall control the policies? 2) who shall do it: that is, who shall implement the policies? and 3) how shall compliance be enforced: that is, how shall performances be measured? These fundamental questions and finding a striking balance between the efficiency in implementation and two side obligations (responsibility and accountability) provide a clear direction towards modeling an effective policy implementation in the public and private institutions (see also, Ruddick, 1980; Goodin, 1995; Monroe, 1998; Howlett & Ramesh, 2009; Buchanan, 2009).

2.4 Philosophical Ontology

Ontologies are the fundamental components of a modern policy administration in relation with socio-cultural prospects, values and status while, taxonomy and core of an ontology is elusive balance between conceptualization and implementation of the public policy. The public policy and its effective implementation have received little attention of the philosophers in studying its philosophical roots. DeLeon (2002) shows that policy administration and implementation have burgeoned from a largely overlooked interest to perhaps the policy analysis growth industry over the last thirty years.

Drawing from the work of Osborne (2006) there are key elements in the public administration which need transparent translation both to public actors and the civilians and they are: 1) the dominance of 'rule of law'; 2) a focus on administering set rules and guidelines; 3) a central rule for bureaucracy in policy making and implementation; 4) the politics—administration split within the public organizations; 5) a commitment to incremental budgeting and; 6) the hegemony of the professional in the service delivery systems in the sector of concern. May et al. (2006) argue that the greater coherence and rationality of policies are desirable, but the concept is under-theorized and has received little empirical examination. On the other hand, Sabatier (2012) notes that theories of the policy process provide a forum for the proponents of several of the most promising and widely used theoretical frameworks to present the basic propositions of their frameworks, to assess the empirical evidence that has developed, and to discuss promising directions for future research. While policy implementation no longer frames the core question of public management and public policy, some scholars have debated appropriate steps for revitalization (see for instance, O'Toole, 2000; Newig & Koontz, 2013; Sabatier & Mazmanian, 1980).

3. Research Data and Method

3.1 Research Population and Sample

The proposed population for this research is based on the objective of the research and thus, categorized in four groups: 1) public agencies 2) private agencies 3) civil society and 4) professors and researchers. Since the security, budget and time are the triple constraint for covering all the intended and targeted recipients from the population, a stratified sampling method is applied to cover major Sectoral Ministries, Public Organizations and the Academics. Since, the population size tends to indefinitely or $N \to \infty$ therefore, the sampling method in aggregate is based on Cochran (1950) proposed formula which is expressed as follow:

$$n = \frac{\left[Z^2\left(pq\right)\right]}{d^2} \tag{1}$$

Where (n) is the sample size, (Z) is the normal standard following Z distribution, p and q are the population elements (here we use the p as the percentage of female respondents and the q as the male respondents in relation to the population) and d is the level alpha i.e. 0.05 or 5%. In addition to that, 10% of the total sample size is potentially subject to non-return and incompleteness. The rational proportion of the sample is therefore allocated to each of the sectors stated above and thus, the sample size for this study is:

$$\begin{aligned} n &= \frac{\left[1.96^2\left(0.35\times0.65\right)\right]}{0.05^2} \\ &= \frac{3.8416\left(0.2275\right)}{0.0025} \\ &\approx 350 \end{aligned} \tag{2}$$

See section four and appendix for descriptive statistics of the sample data and the revised sample size selection on the basis of the real gender participation in the survey.

3.2 Data Collection Instrument

For the sake of collecting primary data from the targeted recipients, a well-structured research questionnaire is developed and used to leverage the anticipated result. The questionnaire is a reversed Likert-type with 5 scales representing ("5=Very Less to 1=Very Much").

Furthermore, we use simulative numerical data to test the competing hypothesis. The data represent the proxy variable such as GDP as the public output and a dummy variable $D_{1t} = 1$ if the shift takes place and zero otherwise. The variable GDP is the Gross Domestic Product of Afghanistan from 2002–2017 arranged on annual basis and is retrieved from the World Development Indicator CD: 2017 (see section 4 for descriptive statistics of the same).

3.4 Testing Procedures

In this section, we provide the statistical models by which the developed hypotheses are quantitatively tested.

3.4.1 Test of Reliability and Validity

To test the reliability, consistency and accuracy of the Likert-scale (Likert, 1932) type questionnaire used in this study as the data collection instrument, the first test to be applied is the Cronbach's alpha. The hypothesized alpha coefficient here is $\alpha \geq 0.70$ the lower of which is not acceptable to base our findings on. This method is introduced by Cronbach (1951) that the equation of which is expressed as:

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K}\sigma_{Y_i}^2}{\sigma_{X_i}^2}\right) \tag{3}$$

where K is the number of factors (here, the number of questions representing the factors), $\sigma_{Y_i}^2, \sigma_{X_i}^2$ are the variance of the dependent and independent variables respectively.

3.4.2 Test of Coefficients

As an alternative, we hypothesize the negative coefficient of paradigm shift to procedural rules for the purpose of its testing, standard linear regression model is used that the equation of which is expressed as follow:

$$\begin{aligned}\text{Efficiency}_i &= \beta_1 + \beta_2\left(output_i\right) + \beta_3\left(Quality_i\right) + \beta_4\left(\text{Reporting}_i\right) \\ &+ \beta_5\left(Decision_i\right) + \varepsilon_i \\ i &= 1,2,3,\ldots,n\end{aligned} \tag{4}$$

Where efficiency is the dependent variable and output of the employee, quality of output, reporting and rational decision making are the explanatory variables in (4). This model responds to the first section of the questionnaire data collected from the recipients.

$$\begin{aligned}Economy_i &= \beta_1 + \beta_2\left(IT_i\right) + \beta_3\left(budget_i\right) + \beta_4\left(Sdev_i\right) \\ &+ \beta_5\left(Costeff_i\right) + \varepsilon_i\end{aligned} \tag{5}$$

Model (5) is used for the second portion of the data collected through the questionnaire in which, the economy is the dependent variable, IT utilization, budget allocation for IT, Sdev (Staff Development) and cost effectiveness are the explanatory variables.

$$\begin{aligned}Effectiveness_i &= \beta_1 + \beta_2\left(ITT_i\right) + \beta_3\left(Attendence_i\right) + \beta_4\left(JDev_i\right) \\ &+ \beta_5\left(Output_i\right) + \beta_6\left(\text{Reporting}_i\right) + \varepsilon_i\end{aligned} \tag{6}$$

The third portion of the questionnaire seeks to collect data on the effectiveness of the shift of traditional to new public administration using e-governance approach for which, IT training and technician, efficiency in attendance of the staff, level of staff output and on-time reporting are to explain the dependent variable. The term ε is the stochastic and random error term added to this and all our models in this study.

$$\begin{aligned}\text{Implementation}_i &= \beta_1 + \beta_2\left(HRC_i\right) + \beta_3\left(PhC_i\right) + \beta_4\left(FRC_i\right) \\ &+ \beta_5\left(Cul_i\right) + \beta_6\left(Inf_i\right) + \varepsilon_i\end{aligned} \tag{7}$$

Model (7) is the main theme if this research in which we try to estimate the robust response of the shift and compute the required coefficients for the implementation of the new public administration through an E-Governance. Model (7) presents the Human Resource Constraint, Physical Resource Constraints, Financial Resource Constraints, Cultural Resistance and Infrastructural Constraints as the independent variable to explain the implementation of the new public administration being as the dependent variable. We also use empirical data to estimate the impact of the new public administration on total output of the microeconomics using the GDP as the dependent variable while we use a dummy variable to estimate the required coefficient. The model used herein is expressed as below:

$$GDP_t = \lambda + \lambda_1 D_{1t} + u_t \tag{8}$$

Where λ is the intercept and λ_1 is the coefficient for the dummy variable included in the model.

4. Data Analysis

4.1 Test of Reliability

To enable further analysis, we use the Cronbach's Alpha approach to test the level of reliability of the primary data obtained from the recipients through the questionnaire. Using equation (3) and the data, we obtain the following:

Table 1. Alpha Cronbach's test

No	Group Name	Coefficient	Standardized Coefficient
1	Efficiency	0.912	0.912
2	Economy	0.563	0.614
3	Effectiveness	0.734	0.748
4	Implementation	0.641	0.643
Overall Coefficient		0.825	0.851

We first show the group-wise alpha coefficient for the reliability and internal consistency of the data in which G1 presents the most consistent coefficient of 0.912, G2 offers a coefficient of 0.614, G3 is 0.748 and G4 is 0.643. Almost all of them are reliable but the overall alpha coefficient for the reliability is 0.851 which is favorable in indicating the most internally consistent and reliable data upon which the rest of our analysis can proceed (see appendix for group-wise one-way ANOVA test of equal variance within the factors). The next section provides the standard linear regression of the groups on which we can base our conclusion. The regression analysis is provided in four categories i.e. "Efficiency", "Economy", "Effectiveness" and "Implementation" of the new public administration (refers to as the "shift" process).

4.2 Regression Analysis

In this section, we provide the standard linear regression as stated in section three of this study.

Table 2. Regression result (dependent variance efficiency)

	Coefficients	Standard Error	t-statistics	p-value
β_1	0.147	0.101	1.458	0.146
Output	0.330	0.067	4.940	0.000***
Quality	0.222	0.066	3.384	0.000***
Reporting	0.273	0.062	4.426	0.000***
Decision Making	0.054	0.064	0.847	0.389

Note. ***$p<0.01$, **$p<0.05$, *$p<0.10$

*Fstat = 84.584, p-value = 0.000****

R-squared = 0.781, Adjusted R-squared = 0.610

The regression estimates in table 2 state that the coefficient for output is 0.33 meaning that in new public administration, by 1-unit increase in output, the efficiency increases by 0.330 unit. By 1-unit increase in quality, the efficiency increases by 0.222 units while, by 1-unit increase in reporting the efficiency increase by 0.273 and finally, by 1-unit increase in decision making, the efficiency increases by 0.054. Most of the coefficients are significant at alpha 0.01. The joint effect represented by F stat is also significant.

Table 3. Regression result (dependent variance economy)

	Coefficients	Standard Error	t-statistics	p-value
β_1	0.867	0.206	4.216	0.000***
IT	0.180	0.026	6.857	0.000***
Budget	0.316	0.060	5.288	0.000***
Staff Development	0.079	0.075	1.057	0.292
Cost-Effectiveness	-0.010	0.061	-0.171	0.864

Note. ***$p<0.01$, **$p<0.05$, *$p<0.10$

*Fstat = 37.106, p-value = 0.000****

R-squared = 0.638, Adjusted R-squared = 0.407

The regression estimates in table 3 state that the coefficient for IT is 0.180 meaning that in new public administration, by 1-unit increase in IT utilization, the economy of the work increases by 0.180 unit. By 1-unit increase in budget allocation for IT utilization in the company, the economy increases by 0.316 units while, by 1-unit increase in staff development the economy increases by 0.079 and thus, by 1-unit increase in cost effectiveness, the economy decreases by 0.010. Most of the coefficients are significant at alpha 0.01. The joint effect represented by F stat is also significant. Though, the R-squared is less than the expected value.

Table 4. Regression result (dependent variance effectiveness)

	Coefficients	Standard Error	t-statistics	p-value
β_1	2.138	0.209	10.249	0.000***
ITT	0.087	0.104	0.8400	0.402
Attendance	0.211	0.105	1.9960	0.047**
Job Division	0.032	0.104	0.3050	0.761
Output	0.040	0.099	0.4050	0.686

*Note. ***p<0.01, **p<0.05, *p<0.10*

*Fstat = 2.408, p-value = 0.050***

R-squared = 0.207, Adjusted R-squared = 0.043

This table shows the result of the regression for the third portion of the data on the effectiveness of the new public administration in which, ITT shows a coefficient of 0.087 with a corresponding p-value of 0.402 which is not significant. The coefficient for attendance is 0.211 with a p-value of 0.047 that is significant at alpha 0.05 while the rest of coefficients are not significant. The Fstat. is significant documenting a joint effect of the variables on the effectiveness.

Table 5. Regression result (dependent variance implementation)

	Coefficients	Standard Error	t-statistics	p-value
β_1	1.152	0.210	5.482	0.000***
HR Resources	0.551	0.064	8.652	0.000***
Physical Resources	0.158	0.062	2.538	0.012**
Financial Resources	0.199	0.057	3.479	0.001***
Cultural Resources	0.148	0.064	2.304	0.022**

Note. ***p<0.01, **p<0.05, *p<0.10

Fstat = 40.944, p-value = 0.000***

R-squared = 0.657, Adjusted R-squared = 0.431

The final portion of the concerned analysis is the implementation of the new public administration instead of the conventional approach. As a matter of fact, this is the main theme of this study upon which we conclude the findings. This regression shows a coefficient of 0.551 for HR resources with a significant p-value while, the coefficient for physical resources is 0.158 with a corresponding p-value of 0.000 which is significant at alpha 0.01. The coefficient for financial resources is 0.199 and is significant at alpha 0.01 and finally, the cultural coefficient is 0.148 with a p-value of 0.022 which significant at alpha 0.05. The Fstat. is 40.944 and supports the rejection of the null hypothesis while the R-squared is a little lower than the expectation.

4.3 Qualitative Response Regression

To conclude the estimation and the data analysis of this paper, we examine the effect of the e-governance on the total output of the country represented by Gross Domestic Product of Afghanistan that is arranged on annual basis (see equation 8 and table A-1 in the appendix).

$$\begin{aligned} \ln(GDP_t) &= 23.19543 \quad + \; 0.575466 D_1 \\ &\quad (0.139956) \quad (0.431372) \\ &\quad [165.7341] \quad [1.334034] \\ R^2 &= 0.094,\; d = 0.1099 \\ Fstat &= 1.7796, p-value = 0.19978 \end{aligned} \tag{9}$$

The regression result shows a constant of ln (23.195) and a coefficient of ln (0.5754D1) for simulative data we used for this regression. It means that if we shift the paradigm, the total output shall increase by ln (0.57) units in average. We ignore the R-squared by using the dummy as a regressor in (9).

5. Discussion on Findings

In this research, we attempt to quantify the robust response of the paradigm shift in government movement towards the new public administration. Though, almost all the researches done yet by a sheer number of scholars in this field, none of them are to indicate any quantitative measurement in helping the process of shift for planning and implementation. On the other side, we also attempt in introducing the proxy measure for excessive procedural rules, market orientation provision for the public services in this study. Reviewing the vast literature, we come to understand that since 1980s the practice of public administration has mostly transformed in a managerial framework. This leads us to look at the foundational practice of the new public administration through a quantitative approach to fill the existing gap. We develop 4 competing hypotheses in this research and use statistical methods to test them and draw our conclusion. This section provides the findings of the research and offers theoretical and empirical discussion on each of the results obtained.

H_1: Government Movement exhibits a robust positive response to paradigm shift; therefore:

$$H_1 : NPA \to PSH, \quad \alpha : 0.05$$

The proxies used to test the stated hypothesis are HRC, PhC, FRC and Cul assuming them to be the foundational factors for transformation. Following are the findings of the hypothesis test using primary data collected from the recipients. The estimated coefficients for the above proxy variables are highly significant both individually and jointly and thus, we reject the null hypothesis in the favor of alternative hypothesis.

H_2: Paradigm shift offers a negative coefficient for excessive procedural rules; therefore:

$$H_2 : \lambda\rho(1-\rho) \neq 0, \quad \alpha : 0.05$$

We use the proxy variables like total output, quality, reporting and decision making process to test the above hypothesis assuming that these proxies are the base for reducing procedural rules in the new public administration transformation processes. The coefficients for all the proxies are highly significant at alpha 0.05 and support to reject the null hypothesis.

H_3: The reinvention of government movement has a long-run memory with market approaches for the provision of public services; therefore:

$$H_1 : \rho \neq 0, \quad \alpha : 0.05$$

For the purpose of quantification of this hypothesis, we use ITT, Attendance, Job Division and output proxies assuming that these proxies can better quantify the variables for determination of the long-run memory and the provision for the public service. The coefficients for almost all of the proxies are highly significant and thus, we reject the null hypothesis.

H_4: The reinvention of government movement has a long-run memory with mechanisms for individual choice rather than public services; therefore:

$$H_1 : IT + Budget + StaffDev + CostEff \geq 1, \alpha : 0.05$$

The proxies for individual choice and the aggregate public service are clearly stated in the above hypothesis and the result of the regression presented in table 3 exhibits a highly significant coefficient and thus, we reject the null hypothesis. One can also see the analysis of variances presented in section 4 that most of the in-between differences in the groups are significant and support our claim in the rejection of the null hypothesis (we have also estimated the one-way ANOVA in supporting the appropriate model selection and interpretation of the results on which we conclude and draw policy recommendation. See the appendix).

6. Conclusion

Tradition government is now of less impression in offering effective public service. An impressive body of quantitative economic has been devoted to understanding the qualitative phenomena and facilitate their estimation. This paper focuses on the paradigm shift from a traditional government into a new public administration using quantitative economic in offering robust response of the shift. We are not concerned of the body of knowledge in such transformation, rather we are concerned on how to offer foundational base of literature for planning and implanting of the new public administration in Afghanistan for the purpose of which we use a set of cross –sectional data obtained through an objective questionnaire from the targeted public employees in Kabul City and using a set of statistics and econometric models in testing the competing hypotheses. The result shows that all the identified proxies in measuring variables associated with the shift process are highly significant and thus, support the robust response towards the stated shift to the new public administration in the country. This paper also documents the highly significant coefficients for the proxies upon which, one can plan and estimate the probable outcome of the shift.

6.1 Recommendation

Understanding the paradigm shift and the impression of quantitative economics in facilitating the planning and implementing the shift by exhibiting the robust response, following are some policy recommendations for the Afghan Policy Makers:

- Traditional approach to administration of the public entities are no longer effective and efficient, understanding the efficiency of the shift, strategic plans of the public organizations may attempt in identifying appropriate transformation framework;
- Comparatively, the anticipated outcome of the shift is much economic than the traditional one. Therefore, we recommend the policy makers in using the estimated coefficients herein to estimate the appropriate plan of outcome maximization by transformation;
- From med-twenty century to date, quantification of qualitative phenomena has been of great attention of the scholars in all knowledge fields, executors may even find it easier in using the same for the advancement of their managerial functionalities in public entities;
- Since, we document the robust response of the shift in aggregate choice for public service, it is strongly recommended that new public administration to be embedded in the legal and lawful documents for a sustainable shift.

6.2 Further Research Avenue

> "Public Administration as an interdisciplinary entail the convergence of organizational theory, social theory, political theory, economic theory and related studies. In this regard, Pollitt (2010) maintains that Public Administration "suffers from multiple personality disorder". It focuses in general on the meaning, structures and functions of the public sector domain in all its forms. Public Administration is thus characterized by diversity and finds its origin in various theoretical schools of thought, which Golembiewski (1977) refers to as a "family of mini-paradigms". From a theoretical perspective, Public Administration recounts historical foundations for the study of government as well as epistemological matters associated with public service as a profession and an academic field. Research in this field is generally complicated by the fact that governance-related phenomena are complex and require multiple dimensions, approaches, models and theories to analyze them. As interdisciplinary, Public Governance can probably best be described as a multi-dimensional field of study involving various research traditions and approaches focusing on governmental, political, economic, technological, legal, social, and cultural systems." (Gerrit, 2017).

This study is of a unique one in its kind and there has never been such a paper in approaching the public administration paradigm in a quantitative method. But there are many other variables to be covered in further researches. I therefore, invite scholars of Quantitative Economics in exploring in-depth proxies for quantification of the variables to facilitate greater and neater estimation of the same.

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Note

Note 1. See also, Lepawsky & Herring (1936); Brans (2009); Bryson et al. (2014); Wu & He (2009); Geva (2002); Henry (1975).

Appendix A. Further Descriptive Statistics of the Data

Table A-1. Descriptive statistics of GDP

Variable	N	Mean	SE Mean	StDev	Minimum	Median	Maximum
lnGDP	19	23.256	0.135	0.589	22.123	23.603	23.791

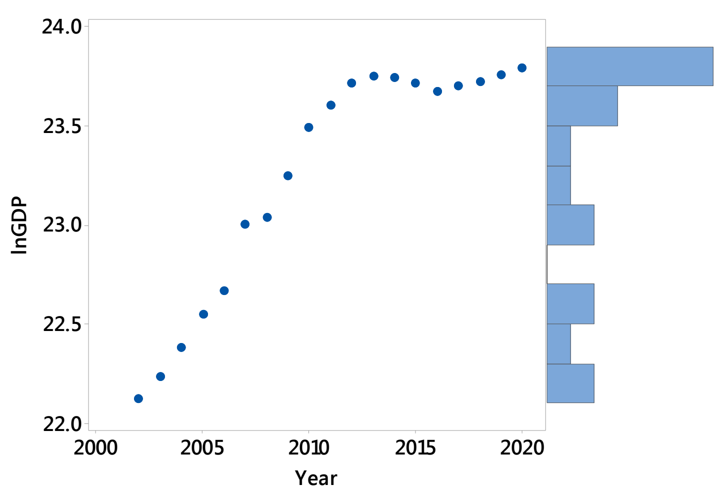

Figure A-1. Marginal plot of lnGDP from 2002–2020

Table A-2. Further statistics on primary data

	Sex	Age	Education	Experience	Position	Organization
N	221	221	221	221	221	221
	0	0	0	0	0	0
Mean	1.1765	2.8552	2.4344	2.5475	2.1193	8.4344
Median	1.0000	3.0000	2.0000	3.0000	2.0000	8.0000
Std. Deviation	.38209	1.43553	.66160	1.15749	1.14582	4.33605
Variance	.146	2.061	.438	1.340	1.313	18.801

The sample size was initially estimated to be 350 using the alpha 0.05 but due to the non-return and incomplete submission of the questionnaires, now the total rounds to 221. This due to:

Initial

$$\begin{aligned} n &= \frac{\left[1.96^2\left(0.35\times 0.65\right)\right]}{0.05^2} \\ &= \frac{3.8416\left(0.2275\right)}{0.0025} \\ &\cong 350 \end{aligned}$$

Altered

$$\begin{aligned} n_1 &= \frac{\left[1.96^2\left(0.176\times 0.824\right)\right]}{0.05^2} \\ &= \frac{3.8416\left(0.145024\right)}{0.0025} \\ &\approx 222 \end{aligned}$$

So, the altered sample size on accounting the female and male proportion as an actual percentage of participation in this study is set to be 222 respondents. Only one respondent was incomplete in answering the questions and thus, is ignored to be added in the database of this research.