

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# 6<sup>th</sup> International Conference on Performance Based Budgeting

ششمین کنفرانس بین‌المللی

بودجه‌ریزی

بر مبنای عملکرد



زمان برگزاری کنفرانس ۱۱ و ۱۲ خرداد ۱۳۹۳  
دبیر علمی کنفرانس دکتر عادل آذر

# Performance Based Budgeting (PBB) and IT-based Technologies in Private and Public Institutions



**Esmail Beigharchegani, S. Mahdi Hosseini**

Vice- presidency for strategic planning and supervision, Tehran, Iran



## Introduction

Performance-based budgeting is an outstanding reform in all around the world, and has been in prominence in different countries for over two decades (Andrews, 2004). It still must exist in an arena that is political, that is dominated by strong personalities, and that has uncertainty as the only constant. However, as Joyce (1997) mentions, it is hard to standardize the definition of performance-based budgeting (Joyce, 1997). A quite strict definition is that performance-based budgeting allocates resources based on the achievement of specific, measurable outcomes (Moynihan, 2003).

Based on the existing literature, “Performance budgeting”, “performance-based budgeting”, and “results-oriented budgeting” are some of the names frequently given to the use of performance measures in budgeting (Behn, 2003). In other words, performance-based budgeting would mean that money would be allocated not just on the basis of perceived needs, but also on the basis of what is actually being accomplished and done. In this way, there will be less to see as inefficient allocation of budgets, lack of enough streams of expenditures, etc. (Kwon, 2004).



# Introduction

For very complicated measurement systems, it might be preferable to contract with information technology or computer design specialists to develop custom-made software applications (Poister, 2004). Then, the new framework of performance-based budgeting requires that each government agency should carefully define its mission, goals, and objectives (Rattakul and Morse, 2005). In this study, we examine the insights of different companies- both private and public- toward using IT-based Performance based budgeting tools. In this regard, we consider organizational personality as a criterion to categorize our findings. Then, the study is organized as follows. First, we reviewed the literature and then, we went through research methods, and respectively we discussed the findings. Finally the paper concludes with some remarks for future research.

### *Performance based budgeting*

Today, while many countries engage in new initiatives on performance-based budgeting, some exhibit very stronger movements towards this approach (Park, 2008). For instance, the Government Performance and Results Act (GPRA) is the latest in a series of attempts to introduce performance-based management and budgeting techniques at the federal level in the United States. In the past, these attempts mostly failed due to administrative complexities, lack of investment in managerial, accounting, and information systems, and the absence of institutional incentives to promote gains in economic efficiency (McNab and Melese, 2003). Nevertheless, PBB has also advanced rapidly in some countries, for example, in the Organization for Economic Co-operation and Development (OECD) as a way to make government more competitive and cost-efficient and as a response to cynical taxpayers who demand more accountable government spending. Many have expanded the practice of PBB and introduced new legislation that requires performance measurement and benchmarking. In the countries that have used performance measurement for a number of years, many have also shifted to report outcomes and build a stronger link between performance and budgeting (OECD, 2002). Following the principles of the GPRA, Taiwan and China (Guangdong Province) also adopted PBB in 2001 and 2003, respectively (Lee and Wang, 2009).



An IT-based financial management system, like PBB, in the public sector is perceived to significantly strengthen accountability and accountancy, as senior officials can immediately monitor the managers' data, forecasts and submissions at the touch of a button (Fyson, 2009). PBB is important to governments for a number of reasons, including the followings: (i) Provides accountability to the public, (ii) Drives redesign of programs (focuses on improvements), (iii) Helps rationalize budget allocations (uses performance information as a basis of evidence), (iv) Improves understanding of crosscutting programs in government, (v) Helps agencies link their daily activities to overall government outcomes and similar activities of other agencies, (vi) Compares cost effectiveness between programs, and the last but not the least (vii) Helps align government spending with overall goals (Harrison, 2003).

Moreover, governments can use performance budgeting and measurement as a guide for decisions to fund or cut programs, for budget presentation and justification, to assess efficiency of programs, to determine service costs, to streamline program and budget structures, to curb departmental flexibility regarding fund transfers, and to eliminate or sunset programs illustrated by the measures as poorly performing. Findings of the prior research indicate that various variables play a role in implementing the performance-based budget. Among these variables the scientific and technical abilities of employees, employees' intention of implanting the system, supporting rules, laws and regulations and information technology play a significant role in the success of the policies (AdelAzar and Amirkhani, 2010).

For data gathering, we distributed 360 questionnaires between the private and public companies dealing with IT-based technologies dealing with performance based budgeting, among which 251 questionnaires were answered- about 70 percent were confirmed. Of all respondents 38.6 percent were from public and 61.4 percent from private companies. Among them 73.7 percent were managers in different levels and 16.3 CEOs. About 62.9 percent of respondents were among 40 to 45 years of age, and 18.7 percent 45 to 55 years of age. 57.8 percent had bachelor degree, and 25.9 percent master or above. About 26.7 percent of the companies had income level of lower than 500,000 USD per annum, 30.7 percent between 500,000 to 700,000 USD per annum, and 21.1 percent more than 700,000 USD per annum. All the data gathered in this research, was analyzed by SPSSv.18 software. For analyzing the hypotheses the Regression analysis and for analyzing differences between private and public companies the Independent two-sample t-test was conducted. The multiple regression analysis of variance was applied for analyzing the effect of income on the perceived organizational personality. For measuring reliability of questionnaires the Cronbach's alpha coefficient is commonly used. The reliability is high if this ratio be higher than 0.7, the reliability is adequate if it's been between the 0.35 to 0.7, and being less than 0.35 means that the reliability is low (Lin, 2010).

For public companies, with “income” we mean the “budget”. Since some of the companies do not deal with their incomes and only annual budgets could be measured. However, in most of the public companies, performance measurement tools were used adequately.



The results of Cronbach's alpha reliability analysis of questionnaires revealed an alpha of 0.675 for the IT-based technologies, and 0.756 for organizational personality. Then, high reliability of the questionnaire was approved. Since the questionnaire used in the study uses scales that have been developed by other researchers and have been used in variety of research efforts, for this research the content validity has been already met. For assuring of structural validity, factor loading in measurement of dimensions must be between 0.5 to 1, all relevant dimensions must be more than 1, and the cumulative explained variance should be more than 50 percent, then we can conclude that the quality of overall assessment and questionnaire is appropriate, so that, the structural validity of the questionnaire is also appropriate. Results obtained from factor analysis show that all factor loadings are more than 0.4, value of all the relevant dimensions are more than 1, and all of the cumulative explained variance of aspects is more than 50 Percent.



## Findings (Table 1 .Validity and Reliability test)

		Explained Variance	KMO	Bartlett's test	
				Chi square (degrees of freedom)	correlation coefficient
IT Based Technologies	Ease of use	53.849	0.793	423.930(28)	0.000
	Acceptance	53.878	0.723	259.729(36)	0.000
	Alertness to technologies	49.281	0.808	483.899(36)	0.000
	Use of technology	48.278	0.819	309.743(28)	0.000
	Openness to experience	54.074	0.757	399.574(45)	0.000
Organizational personality	Responsible	62.880	0.673	133.742(3)	0.000
	Active	61.796	0.656	127.075(3)	0.000
	Adventurous	83.938	0.500	153.446(1)	0.000
	Simple	77.941	0.500	93.033(1)	0.000
	Aggressive	73.044	0.500	59.334(1)	0.000



As one can see in Table 1, all the observed variables explain more than 48 percent of latent variable variance, their KMO coefficient is more than 0.50, and Bartlett's test is also significant for all of them. The Pearson correlation coefficient was used for confirming two-dimensional correlation between variables and correlation coefficient of variables, the results are shown in Table 2. As you can see in Table 3, there are positive correlations between the ease of use with active organizational personality, alertness to technologies with responsible organizational personality, and acceptance with adventurous organizational personality.

## Table 2 .Pearson Analysis

Variables	Extraversion	Acceptance	Alertness to technologies	Use of technology	Openness to Experience	Responsible	Active	Adventurous	Simple	Aggressive
Ease of use	1.000									
Acceptance	0.158 <sup>*</sup> (0.012)	1.000								
Alertness to technologies	0.250 <sup>**</sup> (0.000)	0.401 <sup>**</sup> (0.000)	1.000							
Use of technology	-0.190 <sup>**</sup> (0.003)	-0.447 <sup>**</sup> (0.000)	-0.360 <sup>**</sup> (0.000)	1.000						
Openness to experience	0.300 <sup>**</sup> (0.000)	0.099 (0.116)	0.201 <sup>**</sup> (0.001)	-0.137 <sup>*</sup> (0.030)	1.000					
Responsible	0.148 <sup>*</sup> (0.019)	0.102 (0.108)	0.224 <sup>**</sup> (0.000)	-0.150 <sup>*</sup> (0.017)	-0.017 (0.786)	1.000				
Active	0.189 <sup>**</sup> (0.003)	-0.024 (0.704)	0.049 (0.443)	-0.135 <sup>*</sup> (0.033)	-0.039 (0.538)	0.498 <sup>**</sup> (0.000)	1.000			
Adventurous	0.101 (0.109)	0.160 <sup>*</sup> (0.011)	0.049 (0.443)	0.135 <sup>*</sup> (0.033)	-0.039 (0.538)	0.205 <sup>**</sup> (0.001)	0.406 <sup>**</sup> (0.000)	1.000		
Simple	0.043 (0.589)	0.043 (0.494)	0.112 (0.076)	0.043 (0.497)	-0.051 (0.422)	0.342 <sup>**</sup> (0.000)	0.382 <sup>**</sup> (0.000)	0.170 <sup>**</sup> (0.007)	1.000	
Emotional	-0.006 (0.920)	0.076 (0.231)	0.045 (0.474)	0.063 (0.322)	0.090 (0.153)	0.088 (0.166)	-0.049 (0.443)	0.108 (0.088)	0.031 (0.620)	1.000

\*\* Correlation is significant at the 0.01 level (2-tailed). \*.Correlation is significant at the 0.05 level (2-tailed).

**Hypothesis 1:** There is a meaningful correlation between the IT-based technologies (ease of use, Alertness to technologies and Use of technology) and organizational personality.

The results of Regression analysis which are also shown with more details in Table 3, are as follows. The results of first model are these; ( $\beta=0.242$ ,  $t=2.852$ ,  $p=0.005$ ,  $\rho=0.001$ ), therefore, the hypothesis about a positive correlation between alertness to technologies and responsible organizational personality is confirmed. In the second model we have these results; ( $\beta=0.197$ ,  $t=2.511$ ,  $p=0.05$ ,  $\rho=0.013$ ), so we can confirm the hypothesis about a positive correlation between ease of use and active organizational personality. In the third model, with respect to ( $\beta=0.328$ ,  $t=2.360$ ,  $p=0.05$ ,  $\rho=0.019$ ), we can confirm the hypothesis about a positive correlation between adventurous organizational personality and IT acceptance. According to these results we can confirm the first hypothesis.

**Hypothesis 2:** There is a meaningful correlation between private and public institutions and perceived organizational personality.

The Independent two-sample t test was used for assessing this hypothesis, and the results are shown in the Table 4. As you can see there is not any meaningful difference between private and public companies and perceived organizational personality, so the second hypothesis is not confirmed.

**Hypothesis 3:** There is a meaningful correlation between organizational income level and perceived organizational personality.

The Multiple analysis of variance (MANOVA) was used for testing this hypothesis, and the final results of the test are shown in Table 5. With respect to this table there is not any difference between organizational income level and perceived organizational personality, so we cannot confirm this hypothesis.

Dependent Variable	Independent Variable	$\beta$	t-value	P-value	Model Significant	
First model	Responsible	Ease of use	0.112	1.526	0.128	$\rho = 0.002$ $F = 5.172$ $\hat{R}^2 = 0.048$ $R^2 = 0.059$
		Acceptance	0.012	0.110	0.913	
		Alertness to technologies	0.242	2.852	*0.005	
Second model	Active	Ease of use	0.197	2.511	**0.013	$\rho = 0.001$ $F = 5.738$ $\hat{R}^2 = 0.054$ $R^2 = 0.065$
		Acceptance	-0.212	-1.835	0.068	
		Alertness to technologies	0.244	2.690	*0.008	
Third model	Adventurous	Ease of use	0.124	1.316	0.189	$\rho = 0.042$ $F = 2.782$ $\hat{R}^2 = 0.021$ $R^2 = 0.033$
		Acceptance	0.328	2.360	**0.019	
		Alertness to technologies	0.059	0.537	0.592	

\*\* . Correlation is significant at the 0.01 level (2-tailed). \* . Correlation is significant at the 0.05 level (2-tailed).



## Conclusion

Today, performance measurement is drawing the attention of several companies, both public and private. Since the higher the degree of performance, the more productive the companies will be. Then, it is indispensably axiomatic that performance based budgeting and management could help companies improve themselves. On the other hand, for very complicated measurement systems, it might be preferable to contract with information technology or computer design specialists to develop custom-made software applications. Therefore, in this study we focused on some private and public companies and investigated their propensity to use IT based technologies in order to run PBB. Moreover, we investigated their organizational personality and tested some hypotheses. Based on the findings, there is a meaningful correlation between the IT-based technologies for PBB (ease of use, Alertness to technologies and Use of technology) and organizational personality.



**Thanks for your attention**