A Study of the Possibility of Adopting Performance-Based Budgeting in Iran's Center for Technology Cooperation Using Shah's Model

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Abstract: The purpose of the present research is to identify the driving factors in adoption of performance-based budgeting in Iran's Management and Planning Organization. In this applied descriptive research, a 38-item questionnaire is used for data collection, which consisted of 3 scales—i.e. ability, authority, and acceptance—with each scale having 3 subscales. The results indicate a significant positive relationship between the variables. Moreover, all the variables are at a favorable condition. Finally, the results of Friedman test show that the most important subscales are political acceptance, technical ability, and procedural authority.

Key words: Shah's model, performance budgeting, acceptance, ability, authority

INTRODUCTION

Budgeting is one of the subsystems of an economic, social, and political system whose responsibility is to channel the lifeblood of government revenues to different parts of the society and economy. Thus, any disturbance or disorder will face the country with crisis. Traditional budgeting systems are only concerned with "when" and "where" budgets are spent, while disregarding the purpose of these budgets. The traditional budget structure considers "control" as the amount and process of spending budgets. This structure does not account for the relationship between the expended resources and the expected results (Saraf, 2007).

One of the recent measures taken in Iran's budgeting system is the approach to performance budgeting. Performance budgeting is a common strategy for regulating government activities, increasing its responsiveness, and improving its performance. It refers to the procedures or mechanisms intended to strengthen the link between the funds provided to public sector entities and their outcomes and/or outputs through the use of formal performance information in resource allocation decision-making (Robinson & Brumby, 2005). Performance-based budgeting has been an important project in managing government spending for decades. In the 1990's, however, a new wave of performance budgeting started first in advanced countries and then in developing and transition countries. At this time, performance budgeting was only a part of the extensive information that has been transforming public sector management and the boundary between the public and the private sector.

Performance-based budgeting is a modern budget reform that emphasizes the measurement of government performance by agencies and public servants (Willoughby & Melkers, 2000). It has been in prominence in the USA for over a decade. However, there is evidence that the reform is commonly implemented in a limited fashion. This raises many questions, "Why do few states adopt PBB meaningfully?" and "What needs to be done to ensure meaningful adoption?" (Andrews, 2004).

Since 2002, Iran made dramatic changes in the volume and composition of its budgeting, trying to adopt modern transparent budgets that conformed to international standards. The idea of performance budgeting in Iran was first discussed in Paragraph B of Article 23 of Iran's Budget Act (2002): "The Management and Planning Organization must adopt performance budgeting and reform estimates of revenues and expenditures for all government agencies. Funds must be allocated based on the needs and activities of the agencies". Moreover, in accordance with Article 138 of Iran's Fourth Development Plan, the Management and Planning Organization of the time was required to cooperate with other agencies to reform the budgeting system toward systematic performance-based budgeting. Therefore, the main question of this research is, "What barriers are there on the way to establishing performance-based budgeting in the Management and Planning Organization?"

Review of the Literature:

Budget:

The word "budget" was first used in the French vernacular as "bougette" meaning a leather pouch or bag. This word entered Middle English as "bowget" was used in the same sense as the Old French word (Musakhani & Monshizadeh, 2006). In the 18th century, the British Chancellor of the Exchequer, in presenting his annual statement, was said to 'open the budget', thus giving rise to the modern financial sense (Oxford Dictionary).
Budget reforms that were introduced in industrial countries following World War II under the rubric of "performance budgeting" have been introduced in many guises and generally have endured in some form in most countries. Unfortunately, owing to these many variants, the term itself has been interpreted differently at different times and in different countries. At the broadest definitional level, the term is associated, first, with a budget presentation that emphasizes the outputs rather than the inputs associated with government operations, and second, with a restructuring of government operations on the basis of programs and activities producing these outputs. As a consequence, the term is often used synonymously with program budgeting (Diamond, 2003).

**Budget: A Tool for Improving Planning:**

Using budget as a policy making or planning tool was to adjust financial policies in line with economic goals, where budget revenues and expenditures served special objectives for maintaining economic balance and preventing crises. These objectives included resource allocation, economic stability, and social justice. In terms of economic policies and resource allocation, budget statements must specify investment and growth rate goals and how resources are allocated among different sectors for consumption, deferred revenue, and capital expenditures. In terms of economic stability, economic growth rate, due to its relationship with employment and price stability, must be specified in such a way as to maximize society's benefits and minimize tax pressures. Specifying the limits of budget deficit is the product of the complex process of attaining this objective. Finally, budget must be a tool for minimizing income inequalities and modifying the unfavorable distribution of production flows. For attaining these goals, the role of tax and expenditure programs was highlighted. However, there was no distinctive policy that could be used as a generalizable model (Shobirinejad, 1996). The most important factors in the tendency for planning in budgeting was the development of micro- and macro-economic analyses and their role in the formulation of financial and budget policy as well as the development of new information and decision making techniques (Lyden & Miller, 1982).

**Budget: A Modern Tool in Strategic Management:**

The fourth phase of budgeting started when the organizational environment became turbulent and chaotic, and complexity of decisions and fundamental transformations led to strategic planning in management. During this period, budgeting was a strategic tool for facing unpredictable events. During the 1970's, various scenarios were defined in budgeting and different funds were considered for each activity and program. This led to the advent of zero-based budgeting (ZBB) in 1973.

**Performance-Based Budgeting:**

Performance-based budgeting (PBB) is the practice of developing budgets based on the relationship between program funding levels and expected results from that program. PBB, which is intimately linked to other reforms in financial and budget management, aims not only to improve the performance of the public sector, but also to create economic stability. There is certainly a link between performance goals and stability, and the financial events experienced in many countries since 1980 have highlighted the importance of how limited public resources are spent cost-effectively and efficiently. Despite the resources and efforts dedicated to performance budgeting, there are certain analysts who believe that any effort for implementing PBB will fail (Schick, 2003).

There are many definitions for performance-based budgeting in the literature. Robinson and Brumby (2005) argue that the core objective of PBB is enhanced allocative and productive efficiency. OECD defines performance-based budgeting as a form of budgeting where allocated funds are linked with measurable outcomes (OECD, 2003). U.S. Government Accountability Office (GAO) defines PBB as the concept of linking performance information with the budget (GAO, 1999).

**Driving Factors of Performance-Based Budgeting (Shah’s model):**

Recent attention to governance and reform success has spawned ideas about factors influencing the adoption of PBB. One set of such ideas is provided in Shah's institutional model of the public sector. This model emphasizes on three factors influencing reform adoption: authority, acceptance, and ability. Studies show that the interaction of these three factors determines the reform "space" in which PBB is adopted (Andrews, 2003).

**The Ability to Adopt PBB:**

One of the common reasons for ineffective reform is capacity or organizational ability. Case studies and commentaries on PBB adoption suggest that three aspects of organizational ability are central to PBB adoption: performance evaluation ability, personnel ability, and technical ability.
Performance Evaluation Ability:
The ability to measure performance affects all the stages of PBB adoption (Foltin, 1999). If states lack the ability to effectively measure performance, PBB is guaranteed to fail. At the same time, many governments find that developing outcome and output measures is difficult and time consuming, and indeed many governments are still clarifying what outputs and outcomes are. In some cases it is possible that problems with performance measurement negate the potential of PBB altogether, but these cases are very few. For meaningful adoption of PBB, information from performance evaluation must be used in management and decision making, resource allocation, and development of incentives schemes. It must be noted that this information must be accurate and reliable.

Personnel Ability:
Studies also emphasize the importance of key personnel competencies when adopting PBB. The competency requirements differ from experience to experience and relate to all stages of PBB adoption. The staff must have specific skills in measuring performance and maintaining and managing databases. Analysts are required within executive and legislative budget agencies to set performance targets, ensure communication between information users, and monitor performance. Agencies must develop abilities to identify and measure relevant performance and to use performance data in a constructive way.

Technical Ability:
State experience with PBB also suggests the importance of certain technical abilities. Particular technical requirements relate the need to collect performance information and provide a commonly available database where performance information is readily accessible to a variety of users. The database must be compatible with a variety of other systems providing the basis for government accounting, monitoring, and reporting. If performance data are technically separated from other budgeting and accounting operations, PBB will fail to penetrate the decision-making processes associated with these other operations. If accounting systems are based on input-oriented data, they simply do not facilitate performance-type reform (Willoughby & Melkers, 2000).

The Authority to Adopt PBB:
The second factor influencing PBB adoption relates to authority mechanisms within governments. If budgeters lack the authority to adopt PBB at any of its stages, adoption will be hindered. There are three important aspects of authority: legal authority, procedural authority, and organizational authority.

Legal Authority:
Formal budgeting processes are often tightly legislated. New reforms cannot be adopted if they are not consistent with such legislation. In some governments the potential for using performance measures in budgets is limited by human resource legislation. Most governments legislate how agencies, departments, and individuals can be rewarded or disciplined. There may also be problems with legislation regarding the management's use of performance information that is based on input rather than outputs or outcomes. Such laws and procedures can limit the use of performance information (Andrews, 2004).

Procedural Authority:
Performance measurement and potential use of performance information are often grafted into existing budgeting processes. The existing processes are characterized by established procedures that act as rules binding budgeting behavior. Successful reform adoption requires compatibility of the reform model with these rules and procedures. Flexibility in the shift to a new budgeting system is an important issue that can affect PBB adoption. An important aspect in PBB is to provide conditions for organizations to allocate resources based on their own discretion (Young, 2003).

Organizational Authority:
Lines of organizational authority also affect PBB adoption, especially when it comes to using performance information. PBB is most effectively adopted when discretion is devolved to administrators, allowing them to make decisions about staffing, budgeting, reporting, and so on.

The Role of Acceptance in PBB Adoption:
Resistance to reform on the part of public officials, department heads, and employees may be the biggest obstacle to the implementation and use of performance measures (Kline, 1999). If PBB is accepted by these groups, it is likely to be adopted more readily. There are three aspects of acceptance: political acceptance, managerial acceptance, and incentive compatibility.
**Political Acceptance:**
Political officials' acceptance and support of PBB is crucial in its adoption, while this may have consequences for elected, appointed, and career officials. A number of studies argue that politicians often resist using performance information in allocation decisions, for it increases their vulnerability to constituencies, especially with regard to long-term programs that might not perform well in the short-run. Performance information is also a threat to the political aspects of budgetary decision making, raising such questions as, "What discretion do politicians have in using performance information?"

**Managerial Acceptance:**
The literature shows that acceptance among managers is also critical to PBB adoption, especially when performance information is used in managerial decision making and development of incentive schemes. A major challenge lies in convincing program managers of the value of strategic plans and performance measures (Carter, 1993). The problem of managerial acceptance involves two issues:
1. If agencies feel that legislators will use performance information to reprimand agencies more often than reward them, they will probably not support the plan;
2. If agencies do not consider performance information effective in decision making, they will not support PBB.
The poor use of performance information is partly because some agencies believe "it will go away" (Harris, 2001).

**Incentive Compatibility:**
The budgetary process is replete with incentives. Politicians and administrators have incentives to use specific types of information and to behave in certain ways. If these incentives conflict with PBB, its adoption will be hindered. PBB experts believe that an incentive strategy is required for the use of performance information. They argue that incentives must be part of the PBB plan, while there is a lack of incentives or an inappropriate use of disincentives related to the conduct of performance measurement. The literature also suggests that process-oriented, input-focused budgetary systems are incompatible with a results-oriented approach to government.

**The Conceptual Model and Hypotheses:**
The conceptual model of the research is adopted from Shah's institutional model of the public sector, consisting of three scales (i.e. ability, authority, and acceptance) with each scale having three subscales. Ability, authority, and acceptance are considered as the independent variable and PBB adoption is the dependent variable.

![Conceptual Model](image)

**Fig. 1:** The conceptual model of the research.

**Hypotheses:**
1. There is a significant relationship between performance evaluation ability and PBB adoption.
2. There is a significant relationship between personnel ability and PBB adoption.
3. There is a significant relationship between technical ability and PBB adoption.
4. There is a significant relationship between legal authority and PBB adoption.
5. There is a significant relationship between procedural authority and PBB adoption.
6. There is a significant relationship between organizational authority and PBB adoption.
7. There is a significant relationship between political acceptance and PBB adoption.
8. There is a significant relationship between managerial acceptance and PBB adoption.
9. There is a significant relationship between incentive compatibility and PBB adoption.
Methodology:
The population of the present research consisted of 30 managers, assistants, and experts of Iran's Management and Planning Organization who were active in the budgeting process. Due to the limited population, these individuals were all selected as the sample. The research is descriptive, and a questionnaire was used for data collection. The 38-item questionnaire comprised three scales of ability, authority, and acceptance, and was distributed among the participants after its validity was confirmed by experts. The reliability of the questionnaire was examined using Cronbach's alpha and the results suggested the high reliability of the instrument ($\alpha = 0.82$). Kolmogorov-Smirnov test, chi-squared test, binomial test, and Friedman test were applied for data analysis.

Findings:

Kolmogorov-Smirnov Test:
Kolmogorov-Smirnov test was applied to examine whether data distribution is normal. The results are provided in Table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Test Statistic</th>
<th>Sig.</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability</td>
<td>2.016</td>
<td>0.033</td>
<td>Non-normal distribution</td>
</tr>
<tr>
<td>Authority</td>
<td>1.496</td>
<td>0.009</td>
<td>Non-normal distribution</td>
</tr>
<tr>
<td>Acceptance</td>
<td>1.711</td>
<td>0.009</td>
<td>Non-normal distribution</td>
</tr>
</tbody>
</table>

As shown in Table 1, all the variables have non-normal distribution. Therefore, non-parametric tests were used for data analysis.

Chi-Square Test:
Chi-squared test was applied to examine the relationship between the variables. The results are provided in Table 2.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Test Statistic</th>
<th>Sig.</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Evaluation Ability</td>
<td>6.242</td>
<td>0.000</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Personnel Ability</td>
<td>9.571</td>
<td>0.003</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Technical Ability</td>
<td>9.414</td>
<td>0.000</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Legal Authority</td>
<td>9.983</td>
<td>0.022</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Procedural Authority</td>
<td>7.325</td>
<td>0.041</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Organizational Authority</td>
<td>8.837</td>
<td>0.340</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Political Acceptance</td>
<td>10.216</td>
<td>0.008</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Managerial Acceptance</td>
<td>8.414</td>
<td>0.021</td>
<td>Significant positive relationship</td>
</tr>
<tr>
<td>Incentive Compatibility</td>
<td>11.029</td>
<td>0.013</td>
<td>Significant positive relationship</td>
</tr>
</tbody>
</table>

Table 2 shows that there is a significant positive relationship between PBB adoption and all the independent variables.

Binomial Test:
Binomial test was used to examine the levels of the variables. The results are shown in Table 3.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Test Distribution</th>
<th>Observed Distribution</th>
<th>Sig.</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability</td>
<td>0.5</td>
<td>0.8</td>
<td>0.000</td>
<td>Desirable</td>
</tr>
<tr>
<td>Authority</td>
<td></td>
<td>0.7</td>
<td>0.022</td>
<td>Desirable</td>
</tr>
<tr>
<td>Acceptance</td>
<td></td>
<td>0.7</td>
<td>0.000</td>
<td>Desirable</td>
</tr>
</tbody>
</table>

Friedman Test:
Friedman test was applied to rank the variables. The results are provided in Tables 4-7.

Ranking the Scales:
Table 4 shows that acceptance was ranked as the most important factor, and ability and authority come next.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean Rank</th>
<th>Final Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance</td>
<td>5.58</td>
<td>1</td>
</tr>
<tr>
<td>Ability</td>
<td>5.14</td>
<td>2</td>
</tr>
<tr>
<td>Authority</td>
<td>4.82</td>
<td>3</td>
</tr>
</tbody>
</table>
Ranking Acceptance Subscales:
Table 5 shows that political acceptance and managerial acceptance were ranked as the most important subscales.

Ranking Ability Subscales:
The results of Friedman test indicate that technical ability and personnel ability are the most important ability subscales (Table 5).

Table 5: The results of Friedman test for ranking acceptance subscales.
<table>
<thead>
<tr>
<th>Acceptance Subscales</th>
<th>Mean Rank</th>
<th>Final Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Acceptance</td>
<td>6.00</td>
<td>1</td>
</tr>
<tr>
<td>Managerial Acceptance</td>
<td>5.47</td>
<td>2</td>
</tr>
<tr>
<td>Incentive Compatibility</td>
<td>4.72</td>
<td>3</td>
</tr>
</tbody>
</table>

Ranking Authority Subscales:
Table 6 shows that procedural authority was ranked as the most important authority subscales, with legal authority and organizational authority coming next.

Table 6: The results of Friedman test for ranking ability subscales.
<table>
<thead>
<tr>
<th>Ability Subscales</th>
<th>Mean Rank</th>
<th>Final Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Ability</td>
<td>6.02</td>
<td>1</td>
</tr>
<tr>
<td>Personnel Ability</td>
<td>4.90</td>
<td>2</td>
</tr>
<tr>
<td>Performance Evaluation Ability</td>
<td>3.72</td>
<td>3</td>
</tr>
</tbody>
</table>

Conclusion:
The present research identified the factors that influence the adoption of performance-based budgeting (PBB). A 38-item questionnaire was used for data collection, which was distributed among 30 managers, assistants, and experts active in budgeting processes. The results of Kolmogorov-Smirnov test suggested that the data distribution is non-normal; thus, a set of non-parametric tests were used for data analysis. First, the results of chi-squared test indicated a significant positive relationship between PBB adoption and ability, acceptance, and authority. Then, binomial test was applied and the results suggested that all the variables were at a desirable level. Finally, Friedman test was applied for ranking the variables. The results showed that acceptance, ability, and authority were respectively considered as the most important variables. Moreover, political acceptance, technical ability, and procedural authority were ranked as the most important subscales. Given the positive relationship between PBB adoption and the independent variables, the following conclusions can be made:

1. Special technical abilities are required for collecting performance information and providing a commonly available database where performance information is readily accessible to a variety of users.
2. A coordinated, integrated information system must be developed as a basis for accounting, monitoring, and reporting.
3. Adoption of PBB allows for effective use of funds and prevents possible wastes.
4. In PBB, cost estimates are the basis for allocation of funds; therefore, satisfaction increases at all organizational levels.
5. Sufficient funds must be anticipated for PBB adoption in the Center for Technology Cooperation.
6. The Training Department of the center is recommended to hold courses for introducing different aspects of PBB to the administrators.
7. Increasing personnel ability is an important issue that can facilitate PBB adoption.
8. PBB adoption in the Center for Technology Cooperation not only will facilitate optimal allocation of resources and increase efficiency, but will also allow for measuring the effectiveness of funds and satisfaction.
9. Administrative laws and procedures must be revised in line with PBB adoption.
10. Incentives and disincentives must be compatible with PBB.
11. Necessary authorities must be transferred to the administrators of the Center for Technology Cooperation.
12. Legislation is required for adoption of PBB and how the new laws are being employed must be monitored.
13. Acceptance of PBB among the managers of the center is a key issue, especially with regards to the use of performance information in managerial decision making and creation of incentive schemes. A major challenge lies in convincing program managers of the value of strategic plans and performance measures.
14. Managers must use performance evaluation data in their decision making.
15. Due to the complexity of organizational costs, state-of-the-art software is required for cost evaluation.
16. A link must be established between performance information and resource allocation decisions.
17. Infrastructures such as cost accounting systems are necessary for PBB adoption.
18. An IT-based management information system is essential in PBB adoption, especially given that the Center for Technology Cooperation is a leading center in information technology.

REFERENCES


