

## Feasibility of the implementation of activity-based costing (ABC) in operational budgeting of government agencies (case study: office of Behzisty of Isfahan)

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**Abstract:** An adequate costing system should be used in operational budgeting, which should be able to report the costs of activities and projects. In this regard, activity-based costing (ABC) is a new and developed methodology in analyzing, controlling and computing the actual cost of products and services through assigning overhead costs to a product/service unit based on the share of every activity in the production process. Comparing with other methods of operational budgeting, ABC provides better information to achieve remedial goals both inside and outside the organization. The present study aimed to investigate the feasibility of the implementation of ABC in operational budgeting of the Office of Behzisty of Isfahan province. The population of the study consisted of all accountants, financial controllers and financial managers of the Isfahan counties in the Office of Behzisty. The participants returned a number of 100 questioners which were then analyzed as the research sample. One-sample t test and Friedman test were used to analyze the data. The results indicated that necessary conditions existed for the implementation of ABC in operational budgeting of the Office of Behzisty of Isfahan province.

**Key words:** *Activity-based costing; Operational budgeting; Office of Behzisty of Isfahan province*

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### 1. Introduction

New Zealand was the pioneer to implement operational budgeting system by passing financial responsibility act in 1994. Soon after, Australia and England passed the same law followed by most of the north European countries and the U.S that shifted to operational budgeting system by drawing on New Zealand model. The reform moved forward as much as it allowed more resilience to government agencies to shift their accounting system from cash basis to accrual basis just as the private sector did so that they could draw upon novel and scientific systems such as ABC (McGill, 2000: 376-390). ABC is one of the newest and most comprehensive management accounting systems developed by Kaplan and Johnson in 1980s. The introduction of ABC system is considered as one of the most profound advancements in management accounting in the twentieth century (Namazi, 2007). Management accounting involves activity accounting; strategic management accounting and accounting for advanced technologies, which together have contributed to the development of management accounting. It is necessary for Iranian organizations and management accountants to familiarize with these advancements as soon as possible and apply them in practice (Namazi, 2007).

Computing per unit cost of services in the healthcare sector is the key to implementing operational budgeting, determining actual tariffs and

assigning these services to the private sector consistent with Article 44 of the constitution. Nevertheless, the country seems to have no approaches in place to achieve this goal. Lack of information on the actual cost of services in the public sector has resulted in the failure to implement operational budgeting and privatize the public sector consistent with Article 44 of the constitution. Thus, it seems necessary to design and implement an appropriate costing system. In Iran, passing a law on the adjustment of state regulations for the period 2001-2004 and its extension to The Fourth Development Plan are considered as two important measures taken by the government to modify the financial system. In this regard, the 2002 budget bill was developed based on Government Finance Statistics (GFS) and was approved of by the parliament. GFS was based on operational budgeting; therefore, the government was required to operationalize the budget according to Article 144 of The Fourth Development Plan. Consistent with these changes, governmental accounting system had to change as well. Accordingly, rules and regulations such as the executive guideline of Article 144 of The Fourth Development Plan (focusing on the actual cost of products and services) were developed and communicated to all executive government agencies that were required to identify at least 20 percent of their activities and services annually based on the actual cost method over the course of The Fourth Development Plan and execute them by making contracts with executive directors.

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Operational budgeting indicates the relationship of the costs allocated to a given activity/plan with the outcome of the activity/plan. That is, a given set of goals should be reached after allowing for a given expenditure in a plan. In other words, the general public, managers and authorities would clearly see the relationship between expenditures by government and the outcomes. Operational budgeting is thus the explicit description of the above process whereby the managers can understand the effectiveness of a plan by detecting any inconsistencies between the activity/plan and what is realized in practice (Bakhtiari, 2007:4).

## 2. Research model

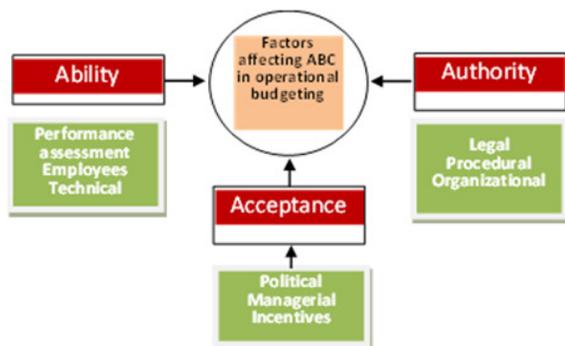


Fig. 1: Research model (Matthew Andrews, 2004)

## 3. Literature review

Melkers and Willoughby (2000) conducted a study entitled 'Implementing PBB: Conflicting Views of Success' as the herald of the studies showing that different states had failed to reach favorable results by implementing operational budgeting system. Afterwards, researchers showed interest in the factors contributing to the effectiveness and implementation of operational budgeting.

Major and Hopper (2008) showed that organizational managers at different levels had different attitudes toward the implementation of ABC. Differences in the definitions offered by executive and legislative authorities, technical issues and other challenges have confounded the implementation of ABC. They reported that the implementation of ABC should be consistent with the human resources resistance and management satisfaction so that greater attention should be paid to behavioral issues. Baird et al., (2006) studied organizational structure and strategy and reported that organization size, the utility of information on the actual costs and organizational culture contributed to the degree performance-based and ABC methods were accepted in the organization.

Chongruksut (2004) investigated the relationship of ABC implementation with behavioral and organizational variables. The results indicated that top management support, education, consistency of the dominant stimuli, coherence between ABC and other accounting systems such as payroll system and performance assessment were the main factors

contributing to the implementation of ABC. The main challenge in the implementation of ABC was the inherent difficulty it posed in data collection.

Azar and Vafaie (2010) studied the factors contributing to the effectiveness of operational budgeting in public organizations. They tried to delve into the literature to extract the factors contributing to the effectiveness of operational budgeting. They suggested two models: pre-execution factors and while-execution factors. Both models were examined using expert opinion and LISREL software. They reported that ability, authority in the implementation of operational budgeting and acceptance were the key pre-execution factors contributing to operational budgeting while the quality of communication at the organizational level and performance-based resource allocation were the main while-execution factors.

Talaie Zavareh (2010) investigated the implementation of operational budgeting using ABC method in the Research and Educational Planning Organization affiliated with the Ministry of Education. The research adopted a descriptive method and used a questionnaire to collect the data. He computed the actual costs by identifying the output from the Office of Planning and Compiling General and Theoretical Textbooks. Abrisham and Rasoulia (2008) carried out a research entitled 'operational budgeting: a model for promoting financial management system' in municipalities in order to further the implementation of ABC as one of the main patterns of operational budgeting. The findings suggested that operational budgeting added the ability to compute actual costs of services to municipality accounting system and could considerably increase the effectiveness of operational budgeting system in municipalities.

Namazi (1999) addressed the important role of ABC in management accounting. In this regard, he first described the mechanism of ABC through numerical examples in order to distinguish it from the traditional framework of cost allocation. Then he studied the application of ABC in industrial and service enterprises in different countries with behavioral considerations. Namazi concluded that ABC was a revolution in the costing systems that can be used as a strong tool to solve complicated problems in management. However, it seemed impossible to reap the benefits of ABC without considering behavioral issues. The most important behavioral constructs include international culture, society and organization, managers' culture, management assessment methods, how to ensure control and the factors contributing to corporate cost sharing.

In a study entitled 'application of ABC in higher education institutions', Baghomian (2005) tried to introduce one of the main applications of accounting information system in computing the actual cost of a variety of activities in higher education institutions. He cited examples to provide a minimal mental background for the implantation of such calculation

methods in universities. He enumerated the benefits of ABC to conclude that the implementation of ABC can help respond to citizens' needs and prevent the waste of resources in ineffective educational courses.

**4. Research hypotheses**

1. Office of Behzisty of Isfahan is able to implement ABC in operational budgeting.

Secondary hypothesis A) Office of Behzisty of Isfahan is able to do performance assessment in implementing ABC in operational budgeting.

Secondary hypothesis B) Office of Behzisty of Isfahan has able employees to implement ABC in operational budgeting.

Secondary hypothesis C) Office of Behzisty of Isfahan has technical ability to implement ABC in operational budgeting.

2. Office of Behzisty of Isfahan has the authority to implement ABC in operational budgeting.

Secondary hypothesis A) Office of Behzisty of Isfahan has legal authority to implement ABC in operational budgeting.

Secondary hypothesis B) Office of Behzisty of Isfahan has procedural authority to implement ABC in operational budgeting.

Secondary hypothesis C) Office of Behzisty of Isfahan has organizational authority to implement ABC in operational budgeting.

3. Office of Behzisty of Isfahan has the acceptance to implement ABC in operational budgeting.

Secondary hypothesis A) Office of Behzisty of Isfahan has political acceptance to implement ABC in operational budgeting.

Secondary hypothesis B) Office of Behzisty of Isfahan has managerial acceptance to implement ABC in operational budgeting.

Secondary hypothesis C) Office of Behzisty of Isfahan has incentives and motivations to implement ABC in operational budgeting.

**5. Temporal and spatial scope of the research**

The study was conducted in the Office of Behzisty of Isfahan province. The temporal scope of the study was summer and fall 2014.

**6. Data collection and instrument**

The data on the literature and relevant documents were collected through library study. The feasibility of the implementation of ABC in operational budgeting in the Office of Behzisty of Isfahan province was examined through field study. A researcher-made questionnaire was used to collect the field data.

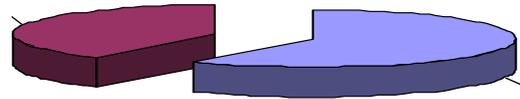
**6.1. Data analysis**

Both descriptive and inferential statistics were used to test the research hypotheses. Specifically, one-sample t-test, Friedman test and one-way ANOVA were run to analyze the data.

**6.2. Description of the data**

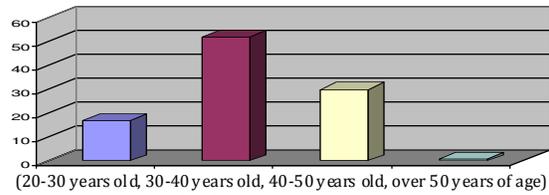
In the following sections, a synopsis of demographic data of the participants is provided in tables and figures.

1. Data on participants' gender



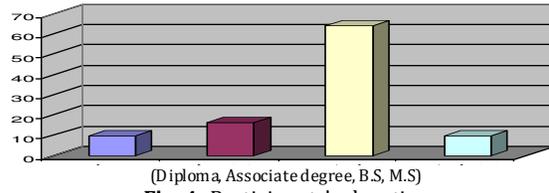
**Fig. 2:** Participants' gender (Male=40%, Female=60%)

2. Age range



**Fig. 3:** Participants' age range

3. Education



**Fig. 4:** Participants' education

**7. Research questionnaire**

Statistical methods were used to examine the research hypotheses. The researcher developed a questionnaire comprising 54 items on a 5-point Likert scale to collect the data. One-sample t test was run to examine the research hypotheses using SPSS software. Then Friedman test was run to determine the priority of every hypothesis and their associated factors.

**8. Inferential statistics**

Testing the research hypotheses: one-sample t test was run to examine the research hypotheses as follows:

Hypothesis 1: Office of Behzisty of Isfahan is able to do performance assessment in implementing ABC in operational budgeting.

**Table 1:** Results of t test of Hypothesis 1

Hypothesis	Mean	t	df	$\alpha$	Sig	Results
H1	3.583	14.688	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha = 0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 14.688$ ). That is, Office of Behzisty of Isfahan is able to do performance assessment in implementing ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the first research hypothesis is supported. Table 4-5 illustrates the results of t test

for the factors corresponding to Hypothesis 1 that are addressed by 9 items on the questionnaire.

Hypothesis 2: Office of Behzisty of Isfahan has able employees to implement ABC in operational budgeting.

**Table 2:** Results of t test of Hypothesis 2

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H2	3.408	12.292	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 12.292$ ). That is, Office of Behzisty of Isfahan has able employees to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the second research hypothesis is supported. Table 4-7 illustrates the results of t test for the factors

corresponding to Hypothesis 2 that are addressed by 11 items on the questionnaire.

Hypothesis 3: Office of Behzisty of Isfahan has technical ability to implement ABC in operational budgeting.

**Table 3:** Results of t test of Hypothesis 3

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H3	3.382	8.017	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 8.017$ ). That is, Office of Behzisty of Isfahan has technical ability to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the third research hypothesis is supported.

Hypothesis 4: Office of Behzisty of Isfahan has legal authority to implement ABC in operational budgeting.

**Table 4:** Results of t test of Hypothesis 4

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H4	3.218	6.023	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 6.023$ ). That is, Office of Behzisty of Isfahan has legal authority to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the fourth research hypothesis is supported.

Hypothesis 5: Office of Behzisty of Isfahan has procedural authority to implement ABC in operational budgeting.

**Table 5:** Results of t test of Hypothesis 5

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H5	3.156	4.095	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 4.095$ ). That is, Office of Behzisty of Isfahan has procedural authority to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the fifth research hypothesis is supported.

Hypothesis 6: Office of Behzisty of Isfahan has organizational authority to implement ABC in operational budgeting.

**Table 6:** Results of t test of Hypothesis 6

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H6	3.487	11.379	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 11.379$ ). That is, Office of Behzisty of Isfahan has organizational authority to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the sixth research hypothesis is supported.

Hypothesis 7: Office of Behzisty of Isfahan has political acceptance to implement ABC in operational budgeting.

**Table 7:** Results of t test of Hypothesis 7

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H7	3.460	7.855	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 7.855$ ). That is, Office of Behzisty of Isfahan has political acceptance to implement ABC in

operational budgeting at the level  $\alpha=0.05$ . Thus, the seventh research hypothesis is supported.

Hypothesis 8: Office of Behzisty of Isfahan has managerial acceptance to implement ABC in

operational budgeting.

**Table 8:** Results of t test of Hypothesis 8

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H8	3.192	4.230	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 4.230$ ). That is, Office of Behzisty of Isfahan has managerial acceptance to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the eighth research hypothesis is supported.

Hypothesis 9: Office of Behzisty of Isfahan has incentives acceptance to implement ABC in operational budgeting.

**Table 9:** Results of t test of Hypothesis 9

Hypothesis	Mean	t	df	$\alpha$	Sig	Result
H9	3.230	5.543	99	0.05	0.001	H. rejected

Since  $Sig=0.001 < \alpha=0.05$ ,  $H_0$  is rejected ( $t_{0.05,99}=1.645 < 5.543$ ). That is, Office of Behzisty of Isfahan has incentives acceptance to implement ABC in operational budgeting at the level  $\alpha=0.05$ . Thus, the ninth research hypothesis is supported.

### 10. Results of testing the research hypotheses

A number of 9 hypotheses were developed and tested in the present study. The results are summarized in Table 12.

### 9. Friedman test

After running t tests to determine the effectiveness of the factors addressed in every hypothesis, Friedman test was used to prioritize the factors and hypotheses.

The insufficient capacity and ability of governmental agencies is one of the main reasons accounting for a lack of implementation of new costing systems such as ABC in the budget structure of the governments. The present findings are consistent with the findings of Krumwiede (1998), Foltin (1999) and Andrews (2004).

**Table 10:** Results of Friedman test

Number	100
Chi-square	119.982
df	8
Sig	0.0001

The implementation of ABC in operational budgeting depends on the mechanisms of authority and legitimacy of the government. Unless the budgeting methodology is legitimate, other stages of the ABC implementation process will be impaired. This is consistent with the findings of Innes and Mitchell (1997), Young (2003) and Andrews (2004).

As shown in the table, there is a significant difference in the mean scores of the factors contributing to the implementation of ABC in operational budgeting.

ABC acceptance is defined as the acceptance of the idea of ABC. That is, according to Chongruksut (2004), an idea can affect the way it is thought in the organization although it may not be put into practice. Thus, the degree to which costing is accepted also includes the number of organizations with an intention to accept it. A lack of acceptance of government agencies, organization management and employees can be the major barriers to the implementation of performance data. This is consistent with the findings of Shields and Young (1989) and Krumwiede (1998).

**Table 11:** Ranking of hypotheses (factors)

Hypothesis (Factor)	Mean rank
Performance assessment	6.55
Human resources ability	5.32
Technical ability	5.04
Managers' authority to extend the rules and regulations	4.18
Financial managers' authority over the relevant procedures	3.61
The degree of managers' authority over Behzisty (welfare)	6.08
Political acceptance	5.97
Acceptance of management authorities of the relevant issues	3.91
Using incentives	4.35

### 11. Implications

As shown in Table 11, performance assessment has the highest priority with a mean rank of 6.55 while acceptance of management authorities of the relevant issues has the lowest priority with a mean rank of 3.91 in terms of the factors contributing to the implementation of ABC in operational budgeting.

As the study was conducted on the Office of Behzisty of Isfahan province, it is recommended that

- The same topic be addressed in other government agencies and the obtained results be compared with the present findings.
- A similar study be conducted using other instruments such as interview, etc.
- Larger samples be used in order to ensure the reliability of the findings.

- A study be carried out on how to train and promote operational budgeting culture and relevant accounting methods.

**Table 12:** Results

Hypothesis	Result
H1: Office of Behzisty of Isfahan is able to do performance assessment in implementing ABC in operational budgeting.	Supported
H2: Office of Behzisty of Isfahan has able employees to implement ABC in operational budgeting.	Supported
H3: Office of Behzisty of Isfahan has technical ability to implement ABC in operational budgeting.	Supported
H4: Office of Behzisty of Isfahan has legal authority to implement ABC in operational budgeting.	Supported
H5: Office of Behzisty of Isfahan has procedural authority to implement ABC in operational budgeting.	Supported
H6: Office of Behzisty of Isfahan has organizational authority to implement ABC in operational budgeting.	Supported
H7: Office of Behzisty of Isfahan has political acceptance to implement ABC in operational budgeting.	Supported
H8: Office of Behzisty of Isfahan has managerial acceptance to implement ABC in operational budgeting.	Supported
H9: Office of Behzisty of Isfahan has incentives acceptance to implement ABC in operational budgeting.	Supported

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