

## Evaluating the Actual Cost of Installment Sales Using Activity-Based Costing Case Study: Bank Hekmat Iranian

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**Abstract.** In this study, the actual cost of installment sales was estimated in 15 branches of Bank Hekmat Iranian in the North West in 2013 using activity-based costing and the obtained results were compared with actual cost applying the traditional method of banking system in Iran. In order to apply the methods and the obtained statistical data, correspondence was carried out. Data normality test was run using a paired comparison of the selected samples. The results revealed that using activity-based costing method, the actual cost of each Rial of deposits had a significant difference with the traditional method. Therefore, it is recommended that this bank replace the traditional approach to activity-based costing method.

**Keywords:** Activity-Based Costing, Bank Hekmat Iranian, Installment Sales

### 1. INTRODUCTION

Activity-Based Costing (ABC) seeks to find and track services and products through activity cost. Given the competitive conditions between public and private banks, as well as trend of transiting public banks to the public in recent years through stock exchange, transparent reporting and further detailed information in this field have been necessarily obtained from users of financial statements

The main objective of the current study was to segregate the actual cost of services in a sample bank in terms of conducted activities and in the form of ABC approach.

Since determination of actual cost of each service provided in banks makes it possible separately to determine their profitability, ABC method in which costing is estimated based on separate overhead rates for each of major types of overhead cost. Although proponents recognize its use beyond the product costs (ABC) and believe that ABC involves a broad range of administrative and selling costs and other costs of an economical firm, due to being overhead costs substantial in many commercial units, overhead costs, proper results have been obtained to apply suitable ABC for allocating these costs too. ABC was first introduced by Kaplan et al in a structured manner. Since then, this method has been implemented in various organizations that were initially manufacturing firms. This method was gradually used as a useful tool for the analysis of actual cost in different sections of financial institutions

Similarly, in the present study, the actual cost of installment sales is investigated in some branches of Bank Hekmat Iranian using activity-based costing and comparing it with traditional methods.

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## 2. THE REVIEW OF THEORETICAL FOUNDATIONS AND STUDY BACKGROUND

### 2.1. Activity-Based Costing (ABC)

ABC to costing relies primarily on activities including an event, task, or doing a work with a specific objective. ABC considers cost of these activities as the basis for apportionment of costs into other cost objectives such as products, services, and recipients of services.

Cooper and Kaplan suggested Activity-Based Costing (ABC) as a way to support new applications (such as comprehensive quality management), particularly to address the overhead effects of correct information on actual cost. In ABC, all activities are analyzed to identify what factors cause costs; in the other words, what result in raising the costs. These causes are commonly named Cost Drivers [1]. In a research study entitled "Investigation into Activity-Based Costing System in Management Accounting and its Behavioral Considerations" by Namazi [2], the main objective was to investigate the important roles of ABC system in management accounting. In this study, the system mechanism along with numerical examples has first been described to determine its main differences with the traditional framework of cost allocation. Then, its practical applications have been evaluated in industrial units, services, and in different countries with necessary behavioral considerations. It was concluded that ABC system is revolutionary in costing systems and can be used as a powerful tool to solve different managerial problems; however, accessibility to these benefits does not seem possible regardless to behavioral considerations. The most important and effective behavioral structures to be considered include: international culture, society and organization, culture of managers, methods of assessing managers, way of creating control, and factors affecting apportionment of costs .[2]

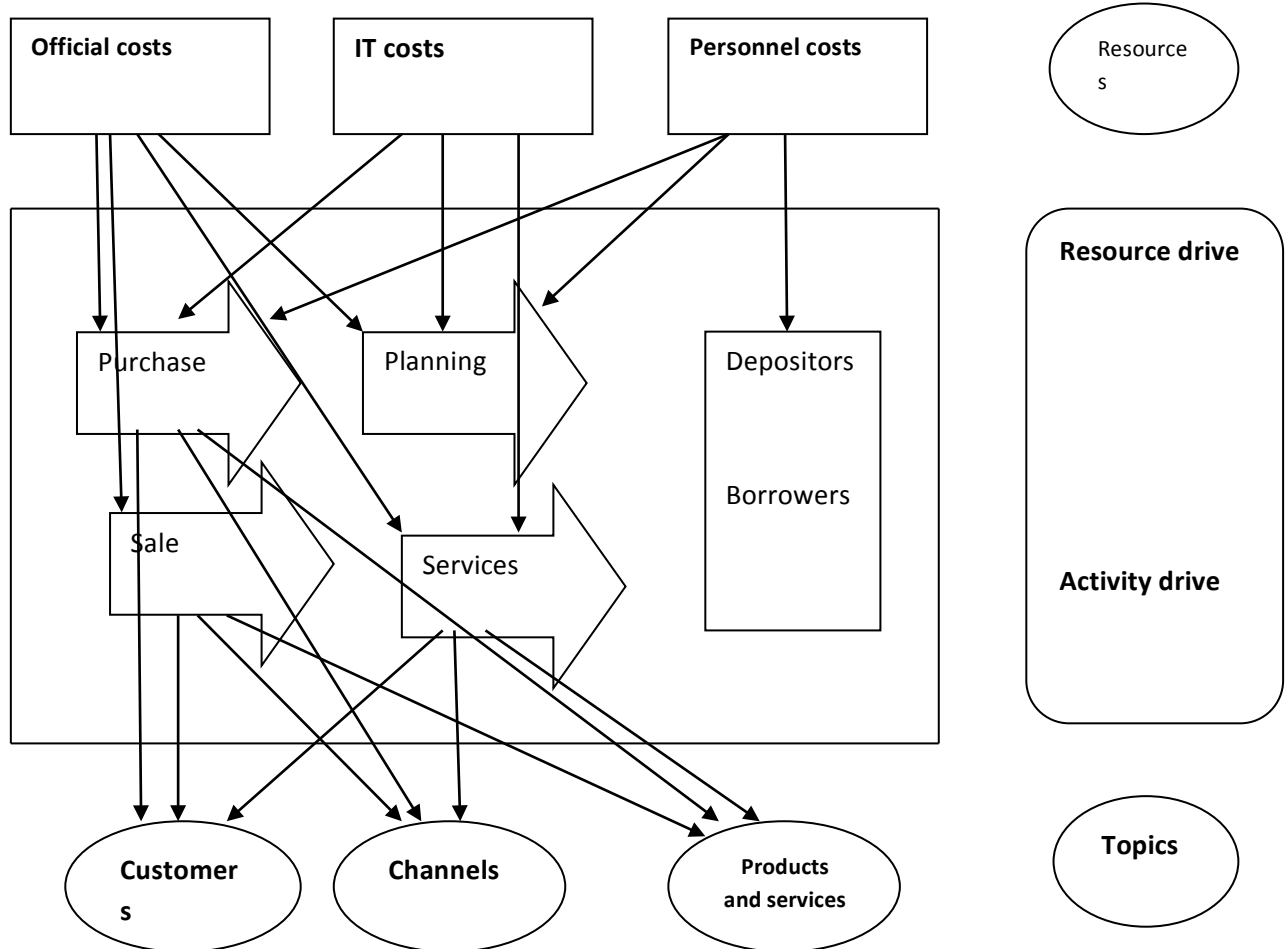
### 2.2. ABC model in a bank

What is practically observed in the collection of the World Banks is to classify banking activities into two major sections; however; the most perfect type of classification can be found in the study by Smith and Harper .The first section is done in the strategic and upper levels of management of banks and more sensitive decisions such as determining bank's policies, how to offer services, and if possible, determining and pricing facilities and received deposits are on the agenda of senior managers. Resources related to the acquiring required resources for banks are purchased or acquired through customers, other banks, and central bank. In this context, all activities leading to the acquisition of bank resources including opening accounts, borrowing other sources, and paying wage and bank profit are considered. Selling or granting facilities is the third section of banking services whose subject is the assignment of resources received from various sources to customers. Granting facilities are done in this section in the form of Islamic contracts such as installment sales, speculation, reward, buying debt, etc. The fourth section of banking service includes other services. Receiving deposits such as bills, counseling and assessing, monitoring and assurance, sales agency of securities etc. can be considered as other services of banks.

With regard to the allocation of indirect costs in Activity-Based Costing system, it is assumed that all costs are indirect and important. To find the appropriate driver for allocating non-operational costs, a repeatable and manageable driver must be used. The general scheme of the levels of bank activity for doing the four above-mentioned services has been provided in Diagram (1). As it can be seen in Diagram (1), banking costs including costs of staff, office, and technology should be allocated to the four activities and in the next stage, they should be prorated to the cost issues including customers, channels of communication, and productions/ services. In practice, the most important section of this process is to select drivers of resources and activities so that costing can be carefully and accurately carried out.

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After determining the four activities, a list of sub-activities of each section should be provided. Also, we should look for necessary derives in order to do the activities. For example, planning section in senior banking levels may be segregated into other activities such as determining policies, how to grant facilities, and pricing banking products and services. In this case, it is necessary to report sub-activities for each one.



**Figure 1.** The view of allocating costs in ABC system

### 3. REVIEW OF THE RELATED LITERATURE

#### 3.1. Foreign studies

Caplan applied ABC in US banks to introduce and implement it and stated that the objective of establishing such system was to meet the demand for banking services according to resources. He showed that ABC system led to more appropriate pricing of the existing services and providing the possibility of evaluating new products and services.

Publishing a series entitled “Time-Oriented Activity-Based Costing”, Caplan and Anderson (2007) indicated that recent ABC system can be used in banks and institutions of financial and insurance services and provide better results than the first generation of ABC.

Fuster [3] showed that 96.2% of sample banks in Spain were familiar with the concept of activity-based costing and 31% of them used this system, 34% were examining it, and 27% of them did not apply it.

Carenys and Sales [4] investigated the role of management accounting techniques in Japanese banks. The results of his study revealed that management accounting techniques such as ABM played an important role in measuring the performance of Japanese banks and that non-financial performance measures were less important than financial performance measures. ABM played a better role as a suitable method in understanding the nature of costs, reducing them and as a result, in decision-making. Among from the studied banks, two ones benefited from this technique.

Using activity-based costing system, Franklin and Kocakulah [5] studied one of the banking services in the United States entitled "Managed Asset Program". The results of their study indicated that contrary to the previous thoughts on applying this system in which the cost of wages is considered as a major cost, other factors should be considered as factors of main cost. Consequently, the cost of providing services in activity-based costing system should be allocated on the basis of other factors.

Rezaee [6] evaluated the development of management information systems in Portuguese banks with focusing on activity-based costing approach. In this study, they presented a model that provided the possibility of investigating the effect of accounting policies on structural changes, exposure surfaces, and the effect of both on the process of power relations in the perspective of Foucault.

Through examining Portuguese banks, Carenys and Sales [4] showed that using the activity-based costing method is limited among this country's banks so that banks prefer to use variable costing method about customers and absorption costing method in branches.

### **3.2. Domestic studies**

Pointing out that banks have moved from the stage of attention to profitability to the profitability of customers, Rezaee [6] indicated the importance of information in decision making. He believes that if an intra-organizational costing system cannot be matched with extra organizational financial reporting system; there would be no basis for assessing the performance and reliability of the data.

Examining the current system of costing of services in the national commercial banks, Arab Mazaryazdi and Naseri [7] designed a model for calculating the actual cost of bank deposits using activity-based costing in Refah Bank. They showed that the results based on ABC had a significant difference between the actual cost of evaluated services and calculated and expected numbers of bank managers.

Malakouti [8] showed that the allocation of indirect costs of Export Bank and principles of allocation of mentioned costs to the operational units have no compliance with the theoretical criteria of accounting literature. He also suggested that to eliminate the limitation in the generalization of results of the best bases for apportionment of costs of the administrative offices via applying activity-based costing method, the amount of each main activity of every office be determined and cost behavior be assessed with cost factor.

Rahnamaye et al [9] estimated estimated and compared the actual cost of banking facilities under two traditional costing and ABC systems using the model of American AMIFS Research Committee for granting facilities in branches of Export Development Bank in 2004. Results of their study indicated that the actual cost of loans granted in the form of contracts such as installment sales, civic participation, and interest-free loan in two costing systems had a significant difference. More detailed numerical calculations indicated that the actual cost of interest-free loan in traditional costing method is less than civic participation and installment sales while civic participation and installment sales have had the same actual cost.

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Meanwhile evaluation of the operational and financial information of Mehr Institute and Export Bank in West Azarbaija, Rahnamaye Roodposhty et al [9] showed that the method of estimating the actual cost of country's banking systems are not appropriate both scientifically and in terms of the rules of Islamic banking. They also indicated that there was a significant difference between the actual cost and traditional method of calculated activity-based ABC.

Namazi and Nazemi [10] estimated and compared the actual cost of e-banking services in Keshavarzi Bank based on two traditional and ABC systems. Results indicated that the actual cost of e-banking services is lower than that of both services. Also, the results confirmed the significant difference between traditional and ABC systems. In this study, in addition to investigating 470 branches of Keshavarzi Bank during 2008, it has been shown that the actual cost in 364 according to ABC system was less than that according to the traditional system. In the remaining branches, the actual cost according to ABC system has been more than that according to the traditional system. These findings were tested in the level of bank evaluators and using questionnaire and similar results were obtained.

### 3.3. Methodology

Since the results from this study solve a specific problem or issue and this type of studies can be used by banking system and financial and credit institutions, financial analysts, financial managers, universities and institutes of higher education, researchers, and financial organizations, the study is applied; however, these studies are descriptive – analytical in terms of inference method and research in terms of type of project.

### 3.4. Formulating the study hypotheses

According to the theoretical foundations of the study, the study hypotheses are raised as follows:

The main hypothesis: There is a significant difference between mean actual cost of types of bank facilities in the traditional method and their actual cost in activity-based costing.

The first sub-hypothesis: There is a significant difference between mean actual cost of installment sales in the traditional method and their actual cost in activity-based costing.

The second sub-hypothesis: There is a significant difference between mean actual cost of reward facilities in the traditional method and its actual cost in activity-based costing.

The third sub-hypothesis: There is a significant difference between actual cost of speculation facilities in the traditional method and its actual cost in activity-based costing.

The fourth sub-hypothesis: There is a significant difference between mean actual cost of civil participation facilitates in the traditional method and its actual cost in activity-based costing.

The fifth sub-hypothesis: There is a significant difference between mean actual cost of free-interest facilitates in the traditional method and its actual cost in activity-based costing.

4. DATA PROCESSING METHOD

In this study, according to the analysis of the costs of selected branches and the general pattern of services in the following diagram, the actual cost of services related to ranting facilities has been used in order to calculate the mean actual cost of granted facilities similar to the method suggested by Anvari Rostami and Rezaiaf [11].

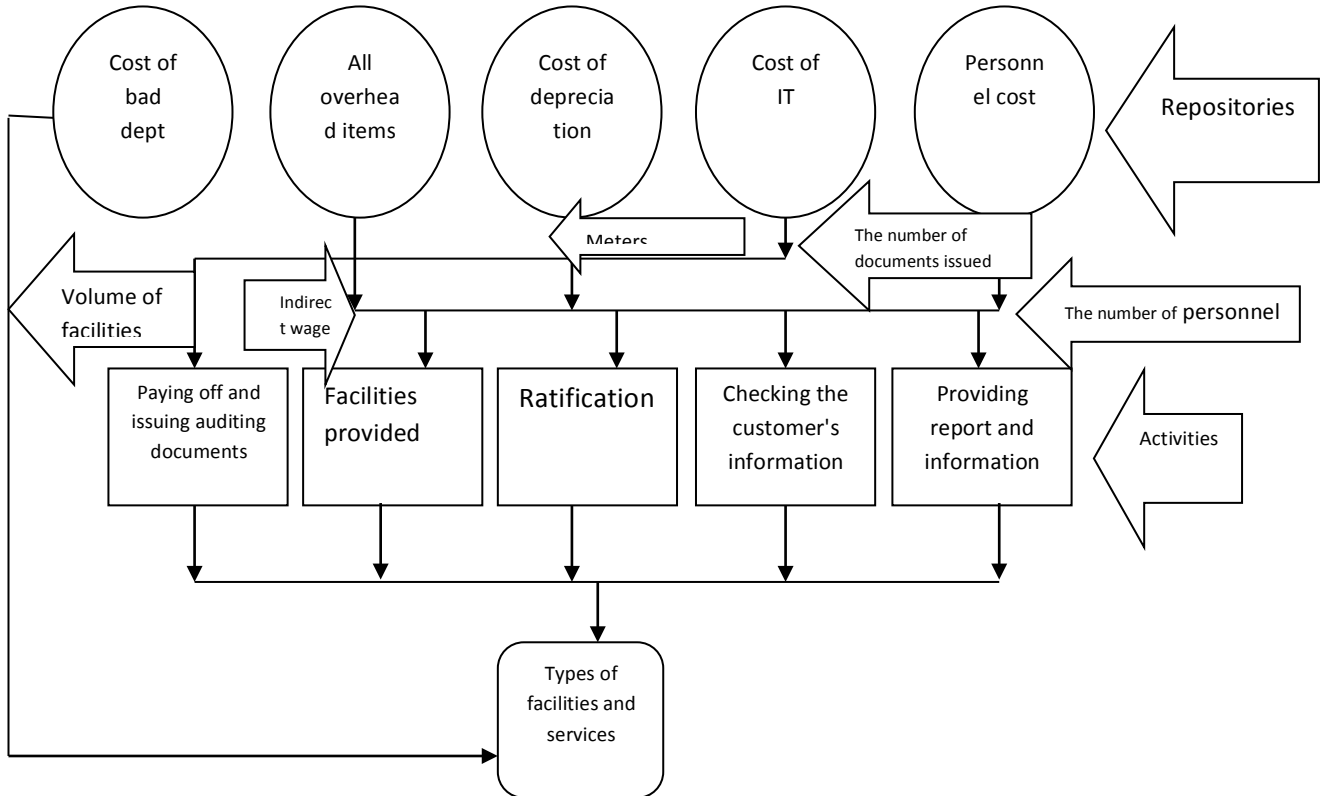


Figure (2): Diagram of ABC model

As it can be seen, at the first stage, overhead costs have been assigned to two cost repositories. The first repository involves costs that directly or indirectly depend on activities of employees. The major costs include personnel costs. Some other costs such as materials and supplies, fuel and light, rental, repair, telecommunications, etc. are also classified in this repository. The second repository consists of costs depending on the volume of deposits and other part of administrative costs such as fund insurance, bill transportation, protection costs, etc. which were classified in this repository in the previous studies. In the second stage, some drivers should be used to allocate costs of repositories. One way for the allocation of costs is to determine how many documents are issued associated with each classification of deposits. Thus, based on the previous studies, one of the allocation bases of the first repository is the number of documents. On the second repository, one of the allocation bases is the mean ratio of residue of deposits to each deposit. Hence, the way of allocating bank costs to each type of deposits can be subject to the following function.

To achieve the actual cost of types of granted facilities in ABC method, the following formula has been used:

$$T_i = (C_a \times r_i) + \left( C_v \times \frac{\bar{V}_i}{\bar{V}_t} \right)$$

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Where  $T_i$ ,  $C_a$ , and  $C_o$  are overhead actual cost of facilities of type  $i$ , overhead operational costs of bank, and overhead non-operational cost, respectively.  $r_i$  is the allocation rate of  $C_a$  to the facilities of type  $i$ .  $\bar{V}_i$ , and  $\bar{V}$  are the amount of facilities of type  $I$  and all granted facilities. Also, types of facilities mentioned in hypotheses include civil participation, speculation, reward, installment sales, and free interest contacts.

## 4.1. Statistical Population and sample

Statistical Population of the study includes Bank Hekmat Iranian and its statistical sample involves the bank branches of North-West of the country consisting of 15 branches in 2013.

## 5. RESULTS

### 5.1. Explaining actual cost of services in Bank Hekmat Iranian in the traditional method

In this study, regarding the analysis of costs of selected branches, general information of services on financial statements of Bank Hekmat Iranian during the fiscal year of 2013 have been given in Table (1).

**Table 1.** Total value of reported services.

Types of services	Amount in millions of dollars
Installment sales	371420
Reward facilities	2318176
Speculation facilities	312077
Civil participation facilities	2107424
Free-interest facilities	325659

In traditional costing method, operational and non-operational costs are allocated to each type of services in terms of the volume of services done. Accordingly, in accordance with information obtained from employees' costs, administrative costs, bad debts and wage payment cost which have been reported in the financial statements of Bank Hekmat Iranian for 2013, the actual cost was obtained as 10000000 Rials for each type of deposits in the traditional method shown in Table (2).

**Table 2.** Actual cost of 10000000 Rial for each type of deposits in 2013.

Types of services	Amount in millions of dollars
Installment sales	5212304
Reward facilities	5239896
Speculation facilities	5259481
Civil participation facilities	5260534
Free-interest facilities	5259650

### 5.2. Estimating Actual cost of types of services of Bank Hekmat Iranian in ABC method

First, the overhead costs have been allocated to three repositories. The first repository includes costs directly or indirectly depending on the work activities of employees. The most important costs include personnel costs. Some other costs such as materials and supplies, fuel and lighting, rent, maintenance, communications are also classified into this repository. The second repository consists of costs depending on the volume of deposits and other administrative costs such as fund insurance, bill transportation, and protection costs classified in the previous studies. Also, the third repository includes depreciation costs.

In the second stage, some drives should be used to allocate the costs of repositories. One way for the allocation of costs is to determine how many documents are issued associated with each classification of deposits. Thus, based on the previous studies, one of the allocation bases of the first repository is the number of documents. About the second repository, one of the allocation bases is the mean ratio of residue of deposits to each deposit. Also, driver of the third repository is the number of the documents issued.

Given that the amount of necessary activity for regulation and issuing various documents is different, by allocating some amounts to the documents issued in connection with types of deposits and facilities, the number of documents is adjusted. In 2010, through studies by a group of experts, Bank Hekmat Iranian assigned amounts to the rate of complexity and time-consuming services to measure the efficiency of branches' services. These amounts are used as user factor to measure the amount of work in the branches. Therefore, these amounts were extracted according to the report of the mentioned experts and to adjust driver, some documents were collected based on Table 3.

**Table 3.** Calculating the rate of the allocation of overhead costs based on driver of the number of issued documents

Type of activities and services		Current deposit	Free-interest deposit	Short-term deposit	Installment sales	Reward	Speculation	Civil participation	Free-interest loan	Total documents
1	Number of issued documents	288192	85065	41290	1562	1851	1233	845	2261	422299
2	User factor	9.14	6.85	10.61	17.22	15.35	12.41	18.12	14.25	-
3	1 * 2	2634074.8	582695.25	438086.9	26897.6	24812.85	15301.5	15311.4	32219.25	3772999

Table (4) shows the Rial value of repositories for 2013

**Table 4.** Rial value of repositories in terms of Million Rials.

Repository 1	Repository 2	Repository 3
376043	206792	78933

The actual cost of services of Bank Hekmat Iranian including types of deposits and types of facilities was estimated in terms of determined drivers. The results are given in Table (5).

**Table 5.** Allocating actual cost of services in Bank Hekmat Iranian via ABC Method (millions Rial).

		Current deposit	Free-interest deposit	Short-term deposit	Installment sales	Reward	Speculation	Civil participation	Free-interest loan
Repository 1	Driver: number of documents	0.60	0.15	0.11	0.01	0.01	0.004	0.004	0.02
	share	259469.67	56406.45	41364.73	3760.43	3760.43	1504.17	1504.17	7520.86
Repository 2	Driver: rate of mean	0.08	0.04	0.43	0.17	0.038	0.19	0.025	0.027
	share	16543.36	8271.68	88920.56	53154.64	7858.1	39290.48	5169.8	5583.4
Repository 3	Driver: number of documents	0.60	0.15	0.11	0.01	0.01	0.004	0.004	0.02
	share	54463.77	11840	8682.63	789.33	789.33	315.7	315.7	1578.66
Rate of ABC cost in terms of percentage		0.5	0.11	0.21	0.06	0.018	0.062	0.01	0.022



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Now, based on these rates, actual cost of 10000000 Rials of each type of services can be stated according to the above ABC costing rate in Table (6).

**Table 6.** Actual cost of 10000000 Rials of types of deposits in 2013 based on ABC.

Types of services	Actual cost in ABC method
Installment sales	187782
Reward facilities	622170
Speculation facilities	105782
Civil participation facilities	600892
Free-interest facilities	222213

### 5.3. Testing the hypothesis

In following, two methods and testing hypothesis are compared that in this regard, paired test is used.

**Table 7.** Results of paired T-test for the main hypothesis and its sub- hypotheses.

First pair: Actual cost according in ABC Actual cost in traditional method	Mean			SD	
		387764			
	5254971				
First pair: ABC- Traditional method	Mean	SD	Number of T-test	P-Value	Degree of freedom
	4867154	2.685	36.248	0.000	3

As it can be observed, the null hypothesis of paired t-test is rejected. Therefore, there is a significant difference between the actual cost of types of bank facilities (including installment sales, civil participation, reward, speculation, and free-interest) in the traditional method and their actual cost in ABC method. Thus, it can be said that, according to the results of paired t-test, the study hypotheses are confirmed at the confidence level of 95%.

## 6. CONCLUSION

The main objective of the study was to evaluate and compare the efficiency of actual cost of services in terms of the type of the service in the traditional method with activity-based costing method (case study: Bank Hekmat Iranian). The investigation into figures of actual cost in this bank indicated that most figures of banking costs related to the overhead costs. This trend is also observed in the level of administrative and personnel costs. In this study, the results from the attribution of bank costs to the granted facilities and their actual cost in both traditional and ABC methods were compared in the level of branches which was the topic of main hypothesis and its sub-hypotheses and it has been shown that there was a significant difference between both mentioned methods. There is also the perspective that in the banking system, bank facilities are the final product; in other words, absorption of deposit is aimed to granting facilities. These preliminary data indicate that the actual cost of granted facilities is not in accordance with the actual cost in ABC method.

It was obtained that P-value of paired t-test is 0.000 for the main hypothesis and its sub-hypotheses which implies to reject the null hypothesis of test based on the absence of significant difference between actual cost in the traditional method and actual cost of types of facilities in ABC method at level of significance of 5% and the mentioned hypotheses are confirmed. The

issue highlights the necessity of using the costing methods to contract for granting facilities as well as to avoid any kind of loses. These results are consistent with the results of Rahnamaye Roodposhty et al [9]. It is suggested that in future studies, considering the mentioned costs, calculations related to the actual cost be done and the results be repeated. These findings are consistent with the argument by Rahmani and Mohtadi [12] based on non-recovery of actual cost of banking services from granted facilities in the form of Islamic contracts.

In order to establish new (time-oriented) generation-based costing system, accessibility to ABC information related to bank processes along with standard time for each bank process is necessary. In future studies, precise results can be estimated using collecting such information.

Despite the fact that in many economic enterprises, establishment of systems of actual cost has been accepted as a necessity, it seems that the usefulness of information is not obvious in the services units of bank for managers. Hence, in the future studies, it should be focused on the issue that what factors will prevent to accept and do investment in banks for establishing such systems.

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