

PERFORMANCE FOCUS ON ACTIVITY BASED COSTING MODEL, EVALUATION AT SINA BANK

^aALI ESMAELZADEH MOGHRI, ^bHAMID REZA KORDLOUIE, ^cMOHAMMAD BAGHER VARMAZYAR

^a*Department of Accounting- Islamshahr Branch- Islamic Azad University- Islamshahr - Iran (Corresponding author)*

^b*Department of Accounting - Central Tehran Branch- Islamic Azad University- Tehran- Iran*

^c*Master of Science Student in Accounting- Islamic Azad University- Islam Shahr Branch*

Email: ^aalies35091@gmail.com,

^bhamidreza.kordlouie@gmail.com, ^cmbvarmazyar@gmail.com

Abstract. The present study intends to not only assess current calculation system of cost price of deposits at Sina Bank, but also prepare a new model for calculation of the same for banking deposits by the use of Costing Model based upon centralized activities at Sina Bank. For this purpose, all types of deposits were studied by the use of descriptive method and PFABC mechanism for calculation of cost price of deposits. Then a model were designed for calculation of any cost price. According to the results, Bank usually considers current account as free deposits. While the costs of this kind of deposit were considerable in 2014 and they were more than short-term investing cost deposits. Moreover, total bank deposits, have suitable profitability, so, the real cost price of deposits is lower than funded cost price.

Keywords: Traditional costing, Activity Based Costing, Performance Focus on Activity Based Costing, Cost price of Banking Deposits, Sina Bank

1 Introduction

At present, there are many companies in developed countries that are changing their Information systems, rejecting traditional models and moving to better costs management with a realistic view. Certainly, any success and continuous activities in such a new competitive environment need some modern methods for changing a simple business into a world level one. This is also true for banking industry.

Price and determining the cost price of products are the most important competitive tools in this field. There are some important cases for determining of correct and real cost price of products/ services. Activity Based Costing (ABC) method will enable the banks to find out an exact image of profitability of various services and customers. This method provides a good chance for finding out better motivators of costs and then put companies in to better situations for making managerial decisions at minor and major levels. In addition, ABC method makes it possible to determine the efficiency and profitability of employees at various branches of bank and headquarters.

Commercial banks in Iran classify equipping costs and allocation of resources under two general titles as Operational or Direct costs (profit of long-term & short-term investments and granted awards to owners of free-interest deposits) and indirect costs accordingly. Therefore, each one of the major services of banking system and the resources of financial supply for banks, all banking deposits include some costs in return. There is a question here how much the cost of mentioned banking deposits? and how we should calculate the cost price of banking deposits according to ABC method?

One of the main goals of designing this information system at the bank and financial institutes are preparing outer-organizational statements and foreign reporting. In case of profit & loss of banks, the cost price of activities calculates base upon traditional methods but there is not separate and exact information about the cost price of special activities or other services and products. (Sepoo et al., 2005).

Meanwhile managerial accounting systems of banks should focus on inter-organizational items in a way to provide better customer satisfaction, international competition and further success at world scale and measurement of people functions at

various departments and sectors. By the way, there are little information about cost price of activities through the mentioned systems. Furthermore, the above-mentioned systems are unable to make any relationship between costs motivators and products of services delivery or the mentioned situation will reduce possibilities for making decisions according to acceptable information. Therefore, it is necessary to establish an efficient cost price system and base upon the latest changes and base on in compliance with various conditions of financial services units, like banks.

According to a complete study of current banking system in Iran, it is obvious that active domestic banks have no more written and applicable costing system and this is a weak point of managerial accounting systems at banks. On the other hand, all banks need exact and correct information about the costs because of newly competitive market that is resulted from privatization policies of the state through establishment of financial institutes and private banks and applying of monetary policies for reduction of profit rates of banking credits.

There is a double need for applying of Activity Based Costing system because of variety of banking services and increase of overhead costs. In addition, with regard to all legal necessities about value of services that are presented to banks, applying of a correct cost price determining system can prepare exact profit margin of the services and according to this profit margin the bank manager will find out variety of services and move the bank to more profits and better activities in new competitive market. Therefore, making a wide scope survey in this field is an effective way for promotion of banking system. As a result, the general purpose of this research is to design a model through which we may calculate the cost price of various banking deposits by Activity Based Costing (ABC) as well.

2 Theoretical basics & research history

The real and clear difference between producing institutes and banks is raw materials to produce goods for selling. Cash amounts are the real raw materials of the banks and financial institutes, which is borrowed from customers and other resources. Due to lack of producing of a real product in banks, services are presented to customers through giving loans and absorption of deposits and relevant services.

There are three major groups of banking products (Anvari Rostami & Rezayat, 2007):

1. Different types of deposits
2. Different types of loans and facilities
3. Different types of non-monetary services such as electronic banking (ATM, POS, terminals of branches and telephone-bank)

Regarding the importance of cost price and little evidences that are existed in the banks and wide scope of cost price from various volumes of banking services, the present study has focused on banking deposits.

There are various researches about costing in accordance with banking industry in different countries. For the first time, Kaplan (1987) illustrated that ABC is applicable at American banks for promoting current services and improving new services.

In 1999, an assistant professor at Montreal University of Canada and editor of CMA magazine, Alexander Mercer made a research project at National Bank Card Services Dept. of Canada and illustrated that Activity Based Costing system at Credit Card Section is the best managerial and strategic tool for determining of cost price of services.

In 2004, Olega Lostic could measure cost price of services at Tarto University through E-banking channel and by the use of ABC method and also she could illustrate that Electronic banking has higher profits than traditional one.

Kaplan & Anderson (2007) not only introduced a new generation of costing titled as Time Activity Based Costing", but also they presented some practical steps for calculating of cost price in each banking transactions especially the cost price of Electronic banking transactions. They used time for allocation of costs.

Fuster (2007) illustrated that about 96.2% of sample banks at Spain are familiar with the concept of ABC 31% have used it, 34% have analyzed it but 27% have not used it anymore.

According to the study of Alnasser & Lee (2008) about Chinese banks, there are so many important reasons that never let Chinese banks to implement ABC in this country such as lack of a clear goal, lack of enough knowledge about Activity Based Costing, Weak planning, lack of partnership, resistance of humane force against changes and present of little foreign resources.

Upon evaluation of Portugal banks, Karniz & Sels (2008) illustrated that ABC method is very limited among the banks of this country and most of banks prefer to use Variant Costing method for customers and Absorbed Costing method at branches.

In Iran so many studies about cost price of banking services including deposit services and grant of facilities and e-banking have been done. For instance, upon studying current costing systems of services at state's trading banks, Arab MazarYazdi & Nasser (2003) presented a model for calculation of cost price of banking deposits by the use of ABC at Refah Bank. They illustrated that there was a considerable difference between the results out of ABC and the expected digits by managers of Refah Bank.

Hoshi & Mansouri Ghenaie (2009) studied any feasibility of calculating the cost price of deposits and issued drafts by ABC method at Mellat Bank.

Rahnamay Rouposhti and the other researchers (2009) operational and financial study in West Azerbaijan Province illustrated that calculation method of cost price at both banking systems is not suitable from practical viewpoint and Islamic Banking Rules. In addition, they illustrated that there is a significant different between calculated cost price based upon ABC and traditional method as well.

Namazi & Nazemi (2012) compared both traditional costing system and ABC at electronic services sector of Keshavarzi Bank in Iran. According to the studies, there is a significant difference between both systems and ABC system is more useful in calculation of cost price than traditional one. The cost price resulted from ABC system in 264 out of 470 branches was more than the same out of traditional one.

Nazemi and Seyedi (2012) calculated the cost price of banking services at 14 selected branches of Mehr Bank in Khorasan Razavi Province by ABC method, and then they compared the results with stated rates in banking system. According to the results, the cost price of 1 Rls. granted facilities has a significant difference with average profit rate without calculation of internal transactions of branches (in the format of borrowing or granting any credits to other branches). However, in Iran nobody has studied about cost price of banking deposits by Performance Focused Activity Based Costing method, which is the subject of the present research.

3 Methodology

Since the real goal of this study is to find any rules and regulations for real and practical situation and promotion of

products and efficiency of executive methods, it is possible to claim that this research is an applicable one.

On the other hand, this study includes data collection for testing of hypotheses or answering to relevant questions of current situation. According to the data collection method, this research is a descriptive and case study. There is a posteriori method of reasoning. Therefore, we should apply the findings out of sample groups into the statistical population.

The present study is a case survey, so Sina Bank has been studied as a sample of all Iranian trading banks. Sina Bank, Mother Sq. Branch (as a great branch of Sina Bank either from submission of different services or from viewpoint of high volume of baking activities) has been selected. We studied all financial statements and financial documentation of this bank that was related to year 2014. Excel software was applied for any required classification and data analysis.

Library and field methods were applied in this survey for necessary data collection:

1. Benefiting from current statistics and information at headquarter units of the bank
2. Benefiting from current statistics and information at various branches of the bank
3. Interview

Executive steps of PFABC

Followings are relevant steps of performance focus on Activity Based Costing in servicing organizations such as producing companies.

There are 9 executive steps in this model:

Step I) Recognition of major activities

Due to two important reasons, this step is important: 1- Nature and behavior of costs for any activity is usually different from others. 2- It is one of the major parts of ABC model, which should be maintained for continuity of production process.

Step II) Determining of real required resources for any activity:

All personnel who may perform a designed activity should specify the type and necessary resources of each activity according to its behavior with other information systems especially accounting information system. Resources may be time, direct materials and other criteria. This step includes real behavior of resources for the subject from two resources: Reflective resources and committed resources.

Step III) Determining the real rate of activities

Real rates of costs will be determined separately in PFABC for any activities and based upon different motivators through current information systems and according to real data and according to relevant resources and behaviors.

Step IV) Determining the price of PFABC activities

The price of activities is determined with regard the behavior of costs resources. When there is a variable source, the costs of input factors are obtained by multiplying of real resources that are used in each activity (AR) in real price of used resources (AP).

Step V) Calculation of standard rate of activities

In this step, standard rate of each activity should be estimated. It should be calculated exactly because of further application for comparing the real rates and real costs of operations.

Step VI) Calculation of price violation

Costs managers obtain price violation by calculating real necessary resources multiply in standard price of consumed resources and minus the same from real costs as well. There is no change for committed resources because of their fixed rates.

Step VII) Calculation of applied costs rate

The first job for calculation of reflective resources is to determine standard rate of consumed resources in an activity. The permitted reflective budget for real job from the viewpoint of reflective resources capacity is obtained by multiplying of required resources of product standard (SR) in real made job (AW) in standard price of resources (SP). In order to calculate any committed resources, we should firstly determine programmed level of budget (BL). It is usually in accordance with practical capacity as well. Therefore, we have $SP \times BL$ (SIRVA) as the price of committed resources. The difference of

both equations is related to reflective resources, which are applied as various costs and related to standard price of activities.

Step VIII) Calculation of violation rate

Violation rate illustrates whether the manager of a producing company has used more than standard rate of production resources or Not. In fact, it is about operation of producing managers.

Step IX) Output of the activities

It means total amount of efficiency and effectiveness. Efficiency of resources is defined as the efficiency of an activity resulted from price violation and quantity violation. Meanwhile the effectiveness of an activity means any difference between real made jobs and budget job related to committed costs.

Table 1- Practical steps for Performance Focus on Activity Based Costing and comparing it with other ABC systems

| PFABC (Third generation) | TDABC (Second generation) | Traditional ABC (First generation) |
|--|---|------------------------------------|
| Step 1- Activity recognition | Not available (At first step of system performance) | Available |
| Step 2- Determining of Consuming resources of activities | Not available for all activities, just for the whole circle | Available |
| Step 3- Calculation of cost rate of consuming resources | Not available for all activities, just for the whole circle | Available |
| Step 4- Determining the costs of activities | Not available | Available |
| Step 5- Calculation of standard rate of activities | Not available | Not available |
| Step 6- Calculation of price violation of consumed resources | Not available | Not available |
| Step 7- Calculation of absorbed costs of activities | Not available | Not available |
| Step 8- Calculation of violation in consumed activities | Not available | Not available |
| Step 9- Calculation of the output of activities | Not available | Not available |

4 Hypotheses

Followings are the hypotheses of research:

1. It is possible to design a model based upon PFABC for costing of banking deposits.
2. In comparison with traditional methods, PFABC Model may present a better image about banking deposits costs.

5 Findings

Equipping of resources

According to the Usury-free Banking Law (Approved in 1983), all Iranian commercial banks are entitled to accept any one of the following deposits:

1. Interest-free deposits

1-1-Current account

1-2- Saving account

2. Deferred investment deposits

2-1- Short-term investment deposits

2-2- Long-term investment deposits (1 year to 5 years)

Rather than these deposits as the major resources of banks, there are some other deposits such as deposit for letter of guarantees, advance payment of letter of credits, advance payments for transactions and so on against some banking services. The above-mentioned deposits are included in the group of financial supply resources.

Sina Bank is providing all above-mentioned services besides saving interest-free deposit, which is the major issue of this study. Later we will analysis the cost price of above-mentioned services.

Since the banking deposits (even long-term investment deposits) are immediate extradition, therefore there are various types of these deposits. So it is better to be used in relevant calculations of cost price of various remained deposits at the end of the year from average monthly deposits.

Table 2- Average remained deposits at Sina Bank- Mother Sq. Branch- Tehran in 2014 (Digits in Million Rls.)

| Year | | Current interest free deposit | Short –term deposit | Long-term deposit | Other deposits | Total |
|------|------------|-------------------------------|---------------------|-------------------|----------------|---------|
| 2014 | Amount | 47,871 | 328,464 | 331,838 | 72,023 | 780,196 |
| | Percentage | %6.1 | %42.1 | %42.6 | %9.2 | %100 |

5.1 Classification of costs at banks

There are two major groups for any costs at commercial banks:

1. Direct costs

It means any payable interest to investors either short-term or long-term (1 to 5 years) and awards of saving interest-free deposits.

2. Indirect costs

- Costs related to human force: It means the costs related to bank staff in any branches. With a glance to ledgers of sample branches of bank it is obvious that most of the mentioned costs are: Salary & allowances, additional work, redemption years of services, allowances, awards, assistants, insurance and coming and going
- Non-personnel costs: It means any costs related to branch operations such as: Publication and stationary and necessities, salaries & consultancy fees, communications and telecommunication and satellite band width and TDM data lines.
- Bad debts: They are obtained through deduction last year reserved facilities from current year reserves (calculated reserve pursuant to Circular Letter of Central Bank) as well.
- Overhead of headquarter & supervisor: It means personnel costs of headquarter and supervisors that are allocated in accordance with number of people in each branch (Supervisor costs have been allocated in accordance with number of occupied employees in branch and under the same supervisor).

- Charges costs & currency exchange: It means charges costs and results of currency exchanges of each branch and price acceleration costs of card branch and currency branch of central department that will be classified in accordance with the resources of each branch.

5.2 Analytical pattern of costing

For allocation of above-mentioned costs, firstly it is necessary to recognize which part of these costs is attributable to the mentioned services. For this purpose, any costs allocation is defined from two different aspects. The first part is traditional costing method and the second aspect is costing method based upon performance focus on activity based Costing. Later both mentioned aspects will be evaluated in details.

5.3 Calculation of cost price of deposits by traditional method

Usually there is not any problems in traditional and new costing methods for allocation of direct costs of products and services, because it is easily possible to browse them for considered goals.

The cost prices of amounts in Sina Bank have been obtained in compliance with considered indexes of Central Bank and according to the relevant statistics and information from General Accounting Management, budget, and IT management as follows:

Table 3- Profit (Loss) of Sina Bank- Mother Sq. Branch- Tehran for the year ended 20. Mar.2014

| No. | Description | Price (Million Rls.) | Price (Million Rls.) |
|---|---|----------------------|----------------------|
| Incomes | | | |
| 1 | Operational income (Rls.) | 448,396 | |
| 2 | Operation income (Currency) | 39 | |
| 3 | Dept. of Currency, Card and Welfare | 2,548 | |
| 4 | Investments and projects and treasury | 0 | |
| 5 | Charges incomes & result of currency interactions | 17,883 | |
| 6 | Income of banking deposit & miscellaneous income | 58 | |
| 7 | Award of legal deposits | 787 | |
| Total income | | | 469,711 |
| Costs | | | |
| 1 | Personnel costs | 2,798 | |
| 2 | Bad debts | 23,292 | |
| 3 | Non-personnel costs | 795 | |
| 4 | Overhead of headquarter & supervisor | 3,428 | |
| 5 | Deposits interests costs | 107,452 | |
| 6 | Charges and results of currency transactions | 2,195 | |
| Total costs | | | 139,960 |
| Profit (Loss) | | | |
| 1 | Operational profit/loss | 357,516 | |
| 2 | profit/loss | 329,752 | |
| 3 | extra/shortage resource | (1,062,016) | |
| 4 | Resources in come/cost | (257,008) | |
| Profit (Loss) of branches after exchange of resources | | | 72,744 |

Table 4- Cost price of amounts at Sina Bank- Mother Sq. Branch- Tehran-ended 20. Mar.2014

| Average rates | | | |
|------------------------------------|---|-----------------------|-----------------------|
| No. | Description | | Percentage |
| 1 | Average interest rate of deposits (%) | | 20 |
| 2 | Average interest rate of facilities (%) | | 25.7 |
| 3 | Cost price of amounts (%) | | 22.4 |
| 4 | Rate of resources to consumption (%) | | 255.4 |
| Average of resources & consumption | | | |
| No. | Description | Price (Millions Rls.) | Price (Millions Rls.) |
| 1 | Total average of resources | | 763,783 |
| 2 | Average of free resources | | 683,496 |
| 3 | Average of facilities (Rls.) | | 1,745,512 |
| 4 | Average of facilities (Currency) | | - |
| 5 | Average of deposits & investments | | - |

5.4 Calculation of cost price of deposits by PFABC method

Firstly, in accordance with Responsibility Measuring Centers, we should extract any costs from financial ledgers. Since it is impossible to make any relationship between costs and activities in ledgers, usually we should classify the costs in a framework of costs reserves. Here we have made a classification in three resources:

- Any costs which are directly or indirectly based upon working activities of personnel.
- Any costs which are affiliated of deposits volume.

- Depreciation costs.

In addition, the base of allocating the costs to activities is based upon responsibility centers. This type of costs is usually each related activities that is time base on time or output of activates. (Maberli, 2009)

Since the overhead costs include a set of heterogeneous subject heading, it has been divided into five sections as well. Regarding the selection base, followings are proposed motivators for dividing of these costs throughout the branches:

Table 5: Proposed motivators for dividing of indirect costs of excellent branch

| Proposed motivator for dividing of costs | Costs |
|---|--|
| Required time for performing of relevant activities to deposits | Personnel costs |
| Required time for performing of relevant activities to deposits | Administrative costs of personnel activities |
| Average balance of deposits | Administrative costs of deposit volume |
| Average balance of deposits | Bad debts |
| Number of issued documents | Depreciation costs |

Firstly, it is better to allocate indirect costs to three reserves of major ones as follows:

1. First reserve includes any costs, which are affiliated, directly or indirectly, with personnel activities. It includes the followings:

A- Personnel costs including: Salary, Subsidy, and Allowances.

B- Administrative costs including: Publication, Necessities, Stationary, Personnel training, Personnel insurance, Fuel & Lightening, Rent, Repairs, Communications & telecommunications, and Clothing.

The second reserve includes various costs in compliance with volume of deposits. This cost group includes the following costs:

A- Other administrative costs including: fund Insurance, Transportation of monies, and Maintenance costs

B- Bad debts

2. The third reserve includes depreciation costs. As it was mentioned before, one of the most important characteristics of PFABC is that depreciation costs would be inserted in a special method in cost price of product. Depreciation is considered in costing procedure based upon consumption rate.

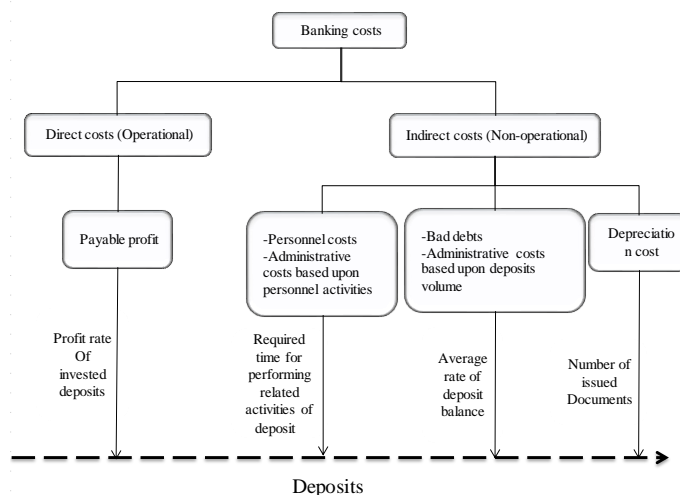


Figure 1: Allocation of banking costs method to any forms of deposits

The real reason of selecting these motivators is that all mentioned costs are affiliated with personnel costs, and therefore we should consider suitable bases with activities of human force in all branches. Firstly, in this study, we allocated personnel and administrative costs in compliance with personnel activities and previous study by Anvari Rostami & Rezayat (2007). Then we divided the same in accordance with real time. In addition, all administrative costs are allocated in accordance with deposits

volume and bad debts are allocated in accordance with average balance of deposits, and Arab Mazar Yzadi and Naseri (2003) would allocate Depreciation costs in accordance with number of issued documents with a glance to the previous study.

Before allocating costs, it is necessary to define real situation of branch costs. Followings are five classification of above-mentioned costs in table 6.

Table 6- Indirect costs of Sina Bank- Mother sq. branch- Tehran in accordance with classification (Digits in Million Rls.)

| Year | Personnel costs | Administrative costs based upon personnel activities | Administrative costs based upon deposits volume | Bad debts costs | Depreciation costs |
|------|-----------------|--|---|-----------------|--------------------|
| 2014 | 3,950 | 1,050 | 3,275 | 23,292 | 941 |

As it is obvious in table No. 6, the major part of branch costs includes bad debts, then personnel costs, and other administrative costs. Salary is the major form of costs, which should be divided in accordance with the time of performing the activities by human force. For this purpose, it is necessary to specify relevant services to human force at first.

Further to the pre-determined cases, the time of banking procedures are the bases of proposed activities for allocation of human force costs. The term of activities are tested on experimental form in this sample branch.

Table 7 illustrates any information about number of issued documents for all deposit accounts as well.

Table 7- Number of issued documents related to various types of deposits in 2014

| Term-Deposit | Current Account | Short-term account | Long-term account | Other deposits | Total documents |
|--------------|-----------------|--------------------|-------------------|----------------|-----------------|
| spring | 11,018 | 1,521 | 101 | 25 | 12,665 |
| summer | 13,458 | 2,291 | 145 | 46 | 15,940 |
| fall | 13,649 | 1,883 | 119 | 37 | 15,688 |
| winter | 18,718 | 2,582 | 172 | 43 | 21,515 |
| Total | 56,843 | 8,277 | 537 | 151 | 65,808 |

Because of different activities for regulation and issuance of different documents, therefore we adjusted the number of documents by allocation of various weights for issued documents related to various deposits. In this step and with regard to the idea of bank specialists, the average weights of issued documents

were applied for calculation of allocation rate of costs. Table 8 illustrates the allocation rate of costs according to the number of issued documents and relevant information of table 7 and after applying the applicable coefficients and further adjustments.

Table 8- Allocation rate of indirect costs according to the number of issued documents and applicable coefficients

| No. | Type of deposit | Current Account | Short-term account | Long-term account | Other deposits | Total documents |
|-----|----------------------------|-----------------|--------------------|-------------------|----------------|-----------------|
| 1 | Number of issued documents | 56,843 | 8,277 | 537 | 151 | 65,808 |
| 2 | Applicable coefficient | 9.13 | 10.63 | 10.63 | 3.96 | - |
| 3 | 1*2 | 518,977 | 87,985 | 5,708 | 598 | 613,267 |
| 4 | Allocation rate (%) | 84.62 | 14.35 | 0.93 | 0.10 | - |

$$\text{Allocation rate of current interest - free deposits} = \frac{518977}{613267} \times 100 = 84.62 \quad (1)$$

5.5 Model design

As it was mentioned before, banking deposits costs include two forms of direct/indirect costs. Direct costs mean the interest rate of investing deposits, which are directly effective in calculation of cost price. Firstly, we calculate the relevant shares of various deposits out of total indirect costs in order to find out the indirect rate of deposits. For this purpose, the share of each deposits will be obtained through multiplying of reserve costs in relevant motivating rate, which is obtainable by adding overhead costs to deposits and total allocated overhead to any deposits accordingly.

Finally, in order to find indirect costs rate for various forms of deposits, we divide indirect costs that are related to various deposits according to their shares out of total deposits of free resources. (Applicable deposits for investment)

Regarding the nature of various banking deposits, all banks are obliged to keep a percentage of their either banking deposits sight or insight as deposit in Central Bank. They are named as "Legal deposits" or "Legal reserves".

Legal reserves of banks may be changed according to the types of deposits by lawmaker in a fixed form or according to final decision of Central Bank and in specific conditions it will be in minimum or maximum levels as well. In addition, it is possible

to have equal amounts as legal reserves for all deposits or different cases for sight or insight (Saving & long-term) deposits. In case of different legal reserves, the relevant reserves of sight deposits (Current accounts) would be determined more than relevant legal reserves of non-sight deposits (Saving & long-term accounts) due to more circulation and monetary nature of deposits.

All banks in Iran are obliged to deposit a part of their own deposits in Central Bank of Iran as legal deposits, and customers would keep a percentage in cash in banks for responding to withdrawal of amounts.

Since a part of bank deposits would be closed as legal deposits, therefore the banks are cannot use them for any investment, and it may cause some costs for the banks which should be reflected in cost price of banking deposits accordingly. Moreover, Central Bank pays an annual interest percentage to legal deposits of banks, which should be reflected in cost price calculation as well.

It is necessary to mention that designed model for calculation of cost price of banking deposits is based upon the following hypotheses:

- All banking services and facilities are delivered just to investors and through current interest –free and short-term investing accounts.
- Cash coefficient for all deposits is considered as %2 in order to define some free resources of bank.

5.6 Calculation model of cost price for current interest-free deposits

Due to lack of any interests for current interest-free deposits and no more awards, they have not any direct costs. But they include a great part of indirect costs in return. Therefore, more than %70 of indirect costs at **Sina Bank** are based upon personnel activity and current interest –free deposits. This is because most of banking services like payments and receipts, letters of credit, granted facilities and so on are granted through the same deposits. On the other hand, any lack of transfer of suitable services may cause transfer of deposits to any bank (s) which present suitable and quick banking services.

Regarding previous classifications for indirect costs and allocation rates for various deposits and regarding all previous items, following formulation is applied for calculating the cost price of current interest-free deposits:

$$R_{t,DD} = R_{DD} = \frac{\left[\left(C_a \times \frac{T_{DD}}{T_t} \right) + \left(C_v \times \frac{\bar{V}_{DD}}{\bar{V}_t} \right) + (C_d \times r_{DD}) \right] - (\bar{V}_{DD} \times S_{DD} \times r_s)}{\bar{V}_{DD}[1 - (S_{DD} + L_{DD})]} \quad (2)$$

Where:

$R_{t,DD}$ = Costs rate of current interest – free deposits

R_{DD} = Indirect costs rate of current interest – free deposits

C_a = Indirect costs based upon personnel activities

T_{DD}
= Required time of relevant activities of current interest – free deposits

T_t
= Total time for performing of related activities to deposits

C_v = Indirect costs related to deposits volume

\bar{V}_{DD} = Average rate of current interest – free deposits

\bar{V}_t = Total balance of deposits

C_d = Depreciation cost

r_{DD} = Allocation rate of C_d to current interest – free deposits

S_{DD} = The rate of legal deposit for current interest – free deposits

r_s = Interest rate of legal deposits

L_{DD} = Maintenance rate of current interest – free deposits for cash

Following is the relevant method of calculation the cost price of a current interest-free deposit by the use of designed model and relevant statistics and deposit information in 2014.

$$R_{t,DD} = R_{DD} = \left\{ \left[\left(5000 \times \frac{91.5}{95.5} \right) + \left(26567 \times \frac{47871}{780196} \right) + (941 \times 0.8462) \right] - (47871 \times \%17 \times \%1) \right\} / 47871 [1 - (\%17 + \%2)] = 0.184 \quad (3)$$

5.7 Calculation model of cost price of short-term investment deposits

This type of deposits has some direct (payable profit to depositors) and indirect costs. Following formulation is used for calculation of cost price of these kind of deposits:

$$R_{t,SHD} = R_{SHD} + R'_{SHD} \quad (4)$$

Where:

$R_{t,SHD}$ = Costs rate of short – term investment deposits

R_{SHD} = Indirect costs rate of short – term investment deposits

R'_{SHD} = Direct costs rate of short – term investment deposits

Indirect costs rate is obtained through following formulation:

$$R_{SHD} = \frac{\left[\left(C_a \times \frac{T_{SHD}}{T_t} \right) + \left(C_v \times \frac{\bar{V}_{SHD}}{\bar{V}_t} \right) + (C_d \times r_{SHD}) \right] - (\bar{V}_{SHD} \times S_{SHD} \times r_s)}{\bar{V}_{SHD}[1 - (S_{SHD} + L_{SHD})]} \quad (5)$$

Where:

T_{SHD} = Performance time of relevant activities of short – term investment deposits

\bar{V}_{SHD} = Average rate of short – term investment deposits

r_{SHD} = Allocation rate of "Cd" to short – term investment deposits

S_{SHD} = Legal deposit rate for short – term investment deposits

L_{SHD} = Maintenance rate o short – term investment deposits for cash

(Because of definition of C_a , T_t , C_v , \bar{V}_t , C_d and r_s in previous formula, it will not be defined in this formula and next formulations).

Following is calculation method of the cost price of short-term investment deposit in 2014:

$$R_{SHD} = \left\{ \left[\left(5000 \times \frac{56.25}{95.5} \right) + \left(26567 \times \frac{328464}{780196} \right) + (941 \times 0.1435) \right] - (328464 \times \%15.5 \times \%1) \right\} / 328464 [1 - (\%15.5 + \%2)] = 0.051 \quad (6)$$

$$R_{t,SHD} = 0.051 + 0.10 = 0.151$$

5.8 Calculation of Cost price of long-term investment deposits

Also there are two types of direct (payable profit to depositors) and indirect costs for long-term investment deposits (1-year, 2-year, 3-year, 4-year and 5-year).

Following formulation is used for calculation of long-term investment deposit costs:

$$R_{t,LID} = R_{LID} + R'_{LID} \quad (7)$$

Where:

R_{LID} = 1 – year long – term investment deposit costs rate

R'_{LID} = 1 – year long – term investment deposit indirect costs rate

R'_{LiD} = 1 – year long – term investment deposit direct costs rate

Following formula is used for calculation of long-term investment deposits indirect costs rate:

$$R_{LiD} = \frac{\left[\left(C_a \times \frac{T_{LiD}}{T_t} \right) + \left(C_v \times \frac{\bar{V}_{LiD}}{\bar{V}_t} \right) + (C_d \times r_{LiD}) \right] - (\bar{V}_{LiD} \times S_{LiD} \times r_s)}{\bar{V}_{LiD} [1 - (S_{LiD} + L_{LiD})]} \quad (8)$$

Where:

T_{LiD} = Required time for performing of related activities of long – term investment deposits

\bar{V}_{LiD} = Average of 1 – year long – term investment deposits

r_{LiD} = Allocation rate of Cdto 1 – year long – term investment deposits

S_{LiD} = Legal deposit rate for 1 – year long – term investment deposits

L_{LiD} = Maintenance rate of 1 – year long – term investment deposits for cash

For instance, it is possible to calculate the cost price of a 2-year long-term investment deposit according to the designed model of 2014 as follows:

$$R_{LiD} = \left\{ \left[\left(5000 \times \frac{9.25}{95.5} \right) + \left(26567 \times \frac{247352}{780196} \right) + (941 \times 0.0069) \right] - (247352 \times \%11 \times \%1) \right\} / 247352 [1 - (\%11 + \%2)] = 0.040 \quad (9)$$

$$R_{tLiD} = 0.040 + 0.185 = 0.225 \quad (10)$$

5.9 Calculation of cost price for other deposits

Other deposits include deposit of Letters of Guarantee, advance payments of Letters of credit, advance payments for transactions

and so on without any direct costs. But they may include a part of indirect costs as well.

Following formula is applied for calculation of cost price of other deposits:

$$R_{tOD} = R_{OD} = \left[\left(C_a \times \frac{T_{OD}}{T_t} \right) + \left(C_v \times \frac{\bar{V}_{OD}}{\bar{V}_t} \right) + (C_d \times T_{OD}) \right] - (\bar{V}_{OD} \times S_{OD} \times r_s) / \bar{V}_{OD} [1 - (S_{OD} + L_{OD})] \quad (11)$$

Where:

R_{tOD} = Cost rate of other deposits

R_{OD} = Indirect costs rate of other deposits

T_{OD} = Required time for performing of relevant activities of deposits

\bar{V}_{OD} = Average of other deposits

R_{OD} = Allocation rate of Cdto other deposits

S_{OD} = Legal deposit rate for other deposits

L_{OD} = Maintenance rate of other deposits for cash

$$R_{tOD} = R_{OD} = \left\{ \left[\left(5000 \times \frac{4.75}{95.5} \right) + \left(26567 \times \frac{72023}{780196} \right) + (941 \times 0.0010) \right] - (72023 \times \%17 \times \%1) \right\} / 72023 [1 - (\%17 + \%2)] = 0.044 \quad (12)$$

5.10 Calculation of cost price of deposits at Sina Bank for 2014

In this part we calculate the cost price of any deposits at Sina Bank in 2014 with regard to all data collected and also prepared models and statistics as well. Excel software has been applied for required calculations the results of calculation are inserted in table 9 as follows:

Table 9- The cost price of any deposits of Sina Bank-Mother Sq. Branch-Tehran in 2014

| Year | Current interest –free deposit | Short-term investment deposit | Long-term investment deposit | | | | | Other deposits |
|------|--------------------------------|-------------------------------|------------------------------|--------|--------|--------|--------|----------------|
| | | | 1-year | 2-year | 3-year | 4-year | 5-year | |
| 2014 | 18.4 | 15.1 | 20.9 | 22.5 | 22.8 | 23.3 | 23.8 | 4.4 |

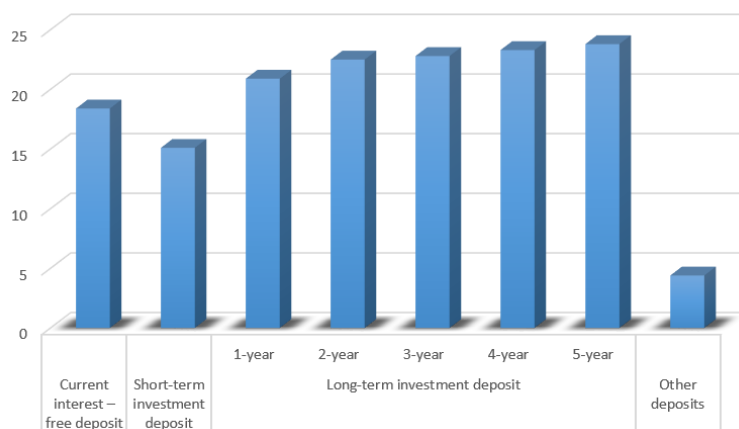


Figure 2- Cost price of deposits at Sina Bank-Mother Sq. Branch-Tehran in 2014

Regarding table 9, all real cost prices of deposits have been obtained through current information systems and according to real data resources. In this step, the standard rate for activities should be estimated. This step has been omitted in ABC and TDABC. But it is assumed as a major step in PFABC as well.

According to table No. 5, all proposed motivators for division of costs include: necessary time for performing activities that are related to deposit, average of deposit balance and number of issued documents. In this step we should estimate the motivators. The first motivator is necessary time for performing relevant activities of deposits. Standard time has been extracted in accordance with bank specialists’ ideas.

The second motivator is average balance of deposits, which has been calculated through received reports (Report of financial

information for the fiscal year ended on 20. Mar.2014) about average balance of deposits in 2014 that is illustrated in table 10.

Table 10- Average budget of deposit balance at Sina Bank- Mother Sq. Branch-Tehran in 2014 (Digits in Million Rls.)

| Year | | Current interest free deposit | Short –term deposit | Long-term deposit | Other deposits | Total |
|------|------------|-------------------------------|---------------------|-------------------|----------------|---------|
| 2014 | Amount | 41,000 | 285,000 | 293,000 | 67,000 | 686,000 |
| | Percentage | %5.98 | %41.55 | %42.71 | %9.76 | %100 |

The third motivator is number of issued documents that are as follows for 2014.

In this step and with regard the ideas of banking affairs specialists; we consider the weight balance of issued documents by the use of applicable coefficients for further calculation of allocated rate to a part of costs. Table 11 illustrates the allocation rate of costs according to the number of issued documents with regard to the relevant information and applying of necessary coefficients and required adjustments.

Because of different activities for preparing and issuance of various documentation, therefore we adjusted the number of documents through allocation of various weights to issued documents related to various deposits.

Table 11- Allocation rate of indirect costs according to the number of issued documents and applicable coefficient

| No. | Type of deposit | Current Account | Short-term account | Long-term account | Other deposits | Total documents |
|-----|----------------------------|-----------------|--------------------|-------------------|----------------|-----------------|
| 1 | Number of issued documents | 60,550 | 9,430 | 770 | 250 | 71,000 |
| 2 | Applicable coefficient | 9.13 | 9.13 | 10.63 | 3.96 | - |
| 3 | 1*2 | 552,821 | 552,821 | 8,185 | 990 | 662,237 |
| 4 | Allocation rate (%) | 83.48 | 15.14 | 1.2 | 0.18 | - |

$$\text{Allocation rate of current interest – free deposits} = \frac{552821}{662237} \times 100 = 83.48 \quad (13)$$

After obtaining the standard rate of resources, price violation should be calculated for activities. For this purpose, firstly, the real required resources for activities should be calculated and

then multiply the real resources in standard price of them due to above-mentioned model and deduct from the real costs accordingly.

Violation cost= (Standard price of resources x real necessary resources) – real costs of activities

Table 12- Calculation of violation cost in 2014

| Description | Deposit of current interest-free account | Short-term investment deposit | Long-term investment deposit | | | | | Other deposits |
|---------------------------------|--|-------------------------------|------------------------------|--------|--------|--------|--------|----------------|
| | | | 1-year | 2-year | 3-year | 4-year | 5-year | |
| Real resources x standard price | 19.5 | 14.9 | 21.5 | 22.9 | 23.4 | 23.8 | 24.3 | 4.6 |
| Real costs | 18.4 | 15.1 | 20.9 | 22.5 | 22.8 | 23.3 | 23.8 | 4.4 |
| Violation cost | 1.1 | -0.2 | 0.6 | 0.4 | 0.6 | 0.5 | 0.5 | 0.2 |

In next step it is necessary to determine standard amount of consuming resources for further calculation of reflective resources. For this purpose, we may use job evaluation system or statistical tools like regression analysis. Permitted reflective budget is obtainable for calculation of real made jobs through multiplying of required standard resources, obligation of job

performance and standard price of resources. In order to calculate pre-determined consuming resources firstly we should determine programmed level of budgets. Then we should specify standard price of pre-determined consuming capacities through dividing of funded costs to funded level.

Table 13- Indirect costs of Sina Bank- Mother sq. branch- Tehran in accordance with classification (Digits in Million Rls.)

| Year | Personnel costs | Administrative costs based upon personnel activities | Administrative costs based upon deposits volume | Bad debts costs | Depreciation costs |
|------|-----------------|--|---|-----------------|--------------------|
| 2014 | 3,650 | 972 | 3,196 | 23,944 | 979 |

Table 14- The cost price of any deposits of Sina Bank-Mother Sq. Branch-Tehran in 2014

| Year | Current interest –free deposit | Short-term investment deposit | Long-term investment deposit | | | | | Other deposits |
|------|--------------------------------|-------------------------------|------------------------------|--------|--------|--------|--------|----------------|
| | | | 1-year | 2-year | 3-year | 4-year | 5-year | |
| 2014 | 17.6 | 15.1 | 21 | 22.6 | 22.9 | 23.4 | 23.9 | 4.5 |

Each deposits calculating is the final step. Total efficiency and effectiveness are illustrated as relevant output. The output of resources is defined as the output of any activities and resulted from price violation and violation rate accordingly. In fact, the output is specified and introduced as any differences between

real made jobs and costing one related to pre-defined costs. Output violation illustrates that whether the programming of resources is used suitably or not? The other factor of output violation illustrates situation that whether a manager be successful in finding any pre-determined goals or not?

Output of activities = Real made jobs – Costing job of predefined costs

Table 15- Calculation of output in 2014

| Description | Deposit of current interest-free account | Short-term investment deposit | Long-term investment deposit | | | | | Other deposits |
|-----------------|--|-------------------------------|------------------------------|--------|--------|--------|--------|----------------|
| | | | 1-year | 2-year | 3-year | 4-year | 5-year | |
| Real job | 18.4 | 15.1 | 20.9 | 22.5 | 22.8 | 23.3 | 23.8 | 4.4 |
| Funded job | 18.8 | 15 | 21.6 | 22.9 | 23.4 | 23.9 | 24.4 | 4.7 |
| Activity output | -0.4 | 0.1 | -0.7 | -0.4 | -0.6 | -0.6 | -0.6 | -0.3 |

6 Conclusion

In this part we may submit some results out of our investigations and evaluations, data analysis and responding to research hypotheses and finally propose our proposals accordingly.

Followings are the results of the present study:

1. It seems that the costs of short-term investment deposit are more than current interest-free deposit. But as it is obvious in table No. 9, the costs of current interest-free deposits at **Sina Bank** in 2014 was more than short-term investment deposit. This bank may usually consider its current interest-free deposits included in free of charge deposits. Meanwhile, there are considerable costs in 2014 and even more than short-term investment deposit.

2. According to table No. 12, it is obvious that besides short-term investment deposit with non-suitable price violation (Real costs are more than standard one), the remained deposits have suitable price violation (real costs are lower than standard one). In addition, and according to table No. 15, all bank deposits, besides short-term investment deposit, have suitable output while the real cost price of deposits is lower than funded cost price.

3. The other considerable point in this research is the effects of contraction/expansion monetary policies on the cost rate of deposits. Therefore, in case of applying any contraction policies for reducing of monies, there is an increase in cost price of deposits due to the reduction of free resources of banks. In contrast, when there is an increase in monetary policies for increase of monies, there is a reduction in volume of free deposits and cost price of it.

4. According to the researches, applying ABC method based upon banks' activities makes bank have better understanding about profitability of their customers and various services. In addition, this method will determine the efficiency and effectiveness of branches and headquarter administrations of the bank. Really it is a good chance for manager to make better financial decisions including any decisions related to granted facilities and their output rate, controlling of indirect costs, relevant decisions about cash structure, combination of capital and banking deposits and salary rate of granted services to customers as well. According to the results, no more correct bases have been applied in traditional classifications and related to various deposits or banking services. This will endanger any correct decisions.

7 Responding to hypotheses

1. It is possible to design a model based upon PFABC for funding any banking deposits.

One of the common methods around world is Activity Based Costing for funding any banking products. In our own country and with regard to considerable percentage of overhead costs (Indirect) out of total bank costs, it is possible to benefit from a variety of operational activities and banking services and also banking mechanization through computer and further registration and recording of accounting activities and also it is possible to use PFABC system for funding any banking deposits.

2. In comparison with traditional costing methods, PFABC model is able to present an exact image of any banking deposits.

According to the researches, PFABC method will enable the banks to find better understanding about profitability of customers and services. In addition, this method will determine the efficiency and effectiveness of branches and headquarter administrations. It may provide a good chance for manager to make better financial decisions including any decisions related to granted facilities and their output rate, controlling of indirect costs, relevant decisions about cash structure of banks and also combination of capital and banking deposits in better situation.

According to the results, it is obvious that there is not a correct base for some traditional classifications about type of deposits (For instance it was revealed that current interest-free deposits need considerable costs while it was assumed that they are free from any costs for the bank).

According to the results, there are some proposals for improvement of funding methods and making better concepts for financial decisions and necessary fields for any competition among the banks through reduction of costs and better management of them.

1. Applying a multiple accounting system at the bank

Today most of financial institutes in the world started to use multiple accounting systems. It may include the following sub-systems:

- A traditional and somehow suitable accounting system with an acceptable operation, which may provide a basic accounting system through common methods in registration of transactions and allocation of costs and submission of financial statements in compliance with common accounting principles for foreign beneficiaries.

- An Activity Based Costing system or other new accounting methods for measuring of real costs of services, customers and organizational units for presenting of exact and correct information (Financial & non-financial) to managers and in order to make better decision. Meanwhile the major role of accounting system and financial affairs in most organizations is controlling of receipts, payments, and registration of accidents for better responding any legal necessities with little attention to management accounting as a managerial tool for controlling of costs and programming.

2. Establishment of an integrated information system about costs & income of the bank

The real requirement for a successful establishment of an Activity Based Costing system (and generally a good and effective accounting system) is an integrated information system of costs and income in compliance with information needs. Meanwhile the current accounting system of the banks are with lack of satisfying any required information needs for measuring and controlling of activity costs.

In order to meet any necessities of both groups (Accountants & decision makers), they should make common items accordingly.

3. Creating a floating rate for granted facilities and salary of banking services

There are different financial funding systems in the banks because of any differences in indirect costs from one side and due to various facilities of management and job skills of personnel in presenting of suitable banking services to depositors as well.

Therefore, in such a condition if banks have no chance just to allocate their deposits and facilities without considering their own costs, there is no more place for further competition. However, if they grant any facilities with regard to their costs, it is possible to have a good competition through reducing of costs and increasing of banking deposits for minimizing of cost price and equipping of resources and finally maximizing of the wealth of shareholders. As a result, estimated independence of banks in determining of banking facilities and salary rate of services play an effective role in competition and increasing of efficiency through reduction of their own costs.

As a result, it is necessary for Central bank, as the executor of monetary and credit policies, to consider major economic goals of country and equipping of banks' resources and create a floating rate for granted facilities and salary rate of banking services. Then it is not only possible to meet profitability goals of banks but also allocate banking resources without any differences with client and lawyer of banks and depositors.

8 Some proposals for future researches

1. Because of wide range of cost price calculations for banking services, the present study focused on banking deposits services. Therefore, it is proposed to implement ABC systems in other sectors of banking services including e banking and grant of facilities and then compare the results.
2. It is proposed to calculate cost price of banking services in accordance with other new methods of funding such as ideal funding, Kaizen funding, Activity Based Costing and comparing them with each other.
3. Costing of banking services by the use of other quantitative methods such as regression advanced parameters, Data Exclusive Analysis and ...
4. Implementation of costing system based upon activity in other servicing institutes
5. Designing a suitable accounting system for calculation of cost price of different banking services based upon ABC system and other costing methods.

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Primary Paper Section: A

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