CHAPTER THREE
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(CASE STUDY)

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Chapter Three: Qualitative Study (Case Study)

3.1. Introduction

First part of this research endeavor has examined and found that in the second half of last century due to heavy competition accuracy in cost ascertainment and accurate cost data in decision making process was the need of the day. With increase in share of indirect cost traditional volume based costing system failed to meet the requirement of providing reliable cost data as demanded by the decision making process. This limitation of Traditional Costing system gave birth to a new debate of having new cost ascertainment system in general that dealt with indirect cost in particular. Hence, after long debates and tremendous efforts of several researchers, professionals, social scientist, and academicians a new system of cost accounting in the name of Activity Based Costing (ABC) replaced the traditional volume based costing system.

An idea of Activity Based Costing floated in 1980s but still it is not practiced widely across the industries. In last three decades service sector started dominating economies worldwide and experiencing cutthroat competition which has created cost awareness in service sector. Hence, this part of the research deals with in-depth case study (Qualitative Approach) analysis of selected Service sector organisations in order to verify the cause and effect relationship of various components of cost. Thus, the present chapter as a pertinent part of the research, projects the use of qualitative analysis with the help of Case Study- a rarity in the earlier researches. This part of the research work, follows case study method due to the nature of research question, lack of control over events and the focus on the contemporary managerial issue (Myers, 2003; Yin, 2003). It investigates the validity, objectivity and efficiency of activity based costing system as a tool of cost management. It is used to identify and eliminate non-value added costs of activities that can be eliminated in cost ascertainment process as well as cost figures, with no deterioration in quality and performance of services and to develop a costing system that determines the efficiency and effectiveness of all major activities performed.

The present research intends to fill the gap between idea and practice of Activity Based Costing in service sector; to study the application of Activity Based Costing in service sectors whether this cost system provides better control over the cost as well

as business decisions in comparison to the traditional costing system. For case study analysis, two organisations are selected from two different important services i.e. Health and Banking. One organisation is selected from Health care sector: Parakh Laboratory, a private laboratory in Vadodara, and the other from Banking sector: the Government Servants Co-operative Credit Society Limited, Vadodara. These organisations are selected considering one – Parakh Laboratory, a small size organisation and another big size oragnisation - the Government Servants Co-operative Credit Society Limited. As they are maintaining accounts and other records systematically on commercial basis, also having cost awareness among management and staff, a professional set up and accessibility to information led to the choice of these organisations for case study.

Though, both the organisations were using traditional method of keeping records, yet, the management showed a keen interest in the concept of ABC, willingness to know the cost of various activities performed, profitability of various services provided to customers and how this information can be used for decision making. Considering the importance of accurate costing for services to reduce costs and to create favorable potential with the help of ABC this study estimates the cost of selected Health Care and Banking organisations. To achieve goals and fruitful results, the case study analysis is carried out by using: Descriptive analysis and Quantitative analysis.

Structurally, this chapter consists of three thematic sections with relative sub-sections. In the first section introduction, objectives and the rationale for the case studies are discussed. Second and third section of the study deals with designing Activity Based Costing System in selected service sector organisation.

3.2. CASE-I: Parakh Laboratory, Vadodara

3.2.1 Introduction

Providing healthcare to its citizens in 21st century has become the most daunting task for all the nations. According to the W.H.O. constitution "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Healthcare systems in many parts of the world today are in turmoil as concluded by the World Health Organization (W.H.O.) so, the

governments in many parts of the world are on a privatization spree making healthcare a luxury for vast segments of society. Also, the Governments in developed and developing countries alike are finding it difficult to help attain the goal of 'Health for all' due to lack of control over escalating cost and the reflection of its affordability on the people. To keep this escalating cost under check, the Central and State Government policy makers continuously plan for monitoring the reason for this escalation. Since Government owned facilities alone cannot take care of the public health care needs, it is also planned to rope in private sector on a reimbursement package basis for critical ailments. Hence, health care reforms become a key fiscal policy challenge in both advanced and emerging economies. As there is increase in the demand of subsidized medical services in the country government is spending significant amount of Gross Domestic Product on health care.

For this, governments across the globe endeavor to make its population aware and provide accessible, affordable, quality healthcare. One of the primary objectives of Government of India is to improve the health status of population. The 12^{th} five year plan (2012-17) focuses on providing universal healthcare infrastructure, promoting R&D and enacting strong regulation for the Health Sector. India's health care system has mixed treatment ownership patterns and with different systems of medicine.

Health care service is gradually emerging as one of the largest service sectors in India. The Health Care Sector in India comprises both of private sector and public sector. The private health care sector comprises organizations with 'nonprofit motive' and also others with 'profit motive'. 'The "not for- profit" health sector consists of various health care service providers such as "Non-Government Organizations (NGO's), charitable institutions, trusts, etc. There is an increasing opportunity for the healthcare provider for their sustenance and growth but, it is preeminent that they need to learn to micro manage their costs. The complexities of health care activities make accurate cost measurement more challenging. When a patient gets admission in the health care he/she consumes different resources until he/she gets discharged. The main concern of healthcare administrator here is accurate management of cost. Since without a correct understanding of cost it is difficult to make out the sound pricing system etc. as they are unable to link cost to process improvements or outcomes, preventing them from

making systemic and sustainable cost reductions & services. Hence, it becomes imperative to hold the sound cost management strategies & techniques.

3.2.2 Need for New Approach

Most Health Care organisations continue to struggle with identifying the costs of products and services provided by them, capturing the full cost of products and services, including inter-entity and department costs as part of full costs. The difficulties experienced in allocation and absorption of costs due to the integration of various inter-related processes and inter-dependence of the processes that are flowing from various service cost centers mutually. The health sector usually finds difficulties to allocate the cost of stand-by facilities. Poor costing system has adverse influence on pricing, quality of service rendered and on its own sustainability.

Calculation of reliable and accurate cost and the identification and elimination of non-value added activities are becoming more significant in the health care sector regardless of public or private health care. Therefore, Health Care demands good cost accounting system for detailed cost information that management needs to control current operations and plan for the future. Activity Based Costing (ABC), as a management accounting tool, offers a remedy for accurate costing as well as improvement in efficiency, effectiveness, and quality of cost information in Health Care.

3.2.3 Parakh Laboratory

Parakh Laboratory is one of the leading providers of pathology/clinical laboratory testing, information and services in Vadodara that offers critical health information and enables physicians and healthcare professionals to make better healthcare decisions. The laboratory is known for continuously introducing new and improved tests, technology and services. Parakh Laboratory has established an undaunted reputation of one of the leading innovators in the clinical laboratory industry in Vadodara.

3.2.4 Methodology

The methodology adopted to collect the required information is based on an analytic-descriptive study, through observations and review of financial documents and extracting cost information of Parakh Laboratory. Study of profitability by establishing the cost - price relation of services has been carried out by adopting Time Driven Activity Based Costing (TD-ABC) technique of the financial information for the year 2015-2016.

The data collection for the study was carried out during June 2015 to April 2016. In order to ensure a high degree of un-biasness and consistency in conducting this study, the researchers used multiple data collection methods. These methods include; preliminary survey, field research, interviews, observations, and documentary analysis. In order to provide more independent views for the study, interviews were conducted with individuals belonging to multiple aspects of the TD-ABC process at the Laboratory (refer Appendix 1).The collected data were analyzed using an explanatory building approach (Yin, 2003).

The researcher conducted a preliminary survey to gain an understanding of the Laboratory and gathered information about the existing cost system. Research was directly conducted at the site i.e. Parakh Laboratory through observations and interviews.Observations regarding types of laboratory tests conducted, activities performed like registration, cash collection, sample collection, sample processing, testing techniques, report preparation, delivery of report were made to collect data and identify cost derivers and cost pools as well as establishing cause and effect relationship among them. Observations were made by visiting the Laboratory regularly. Data was collected from the interviews with responsible personnel at the laboratory. These interviews were very useful for the researcher to gain an understanding about the laboratory, cost heads, activities and the application of existing cost system. Relevant data collected, compiled and documented by taking into account internal laboratory documents like entry register, case register, test register, cashbook and financial statements to understand the different Activity Based Costing application related aspects and its use in cost ascertainment.

3.2.5 Developing Time Driven Model

Time driven activity based costing model for Parakh Laboratory is developed on the basis of the mathematical model suggested by Kaplan and Anderson which is simpler, less costlier and faster to implement, and allows cost driver rates based on practical capacity of the resources supplied. Under traditional ABC, the costs are ascertained per transaction by assuming that each occurrence of the transaction consumes the same quantity of resources. It is on this assumption that TD-ABC differs, as it considers that duration (time) drivers are more accurate and less expensive than transaction drivers. Therefore, TD-ABC has emerged as an alternative approach for costing that addresses all the problems and limitations of the traditional ABC as highlighted above.

TD-ABC is very suitable for a service company such as Laboratory, because Laboratory activities are primarily measured on the basis of labour time used for performing a given activity, having high portion of overhead cost. TD-ABC simplifies the process of creating an activity-based costing model; this has made it easy to create models that do not need very high levels of details and accuracy and still enables to have a reasonable working model. It uses time as a measure of resource consumption by activities that have been triggered by cost objects to produce outputs. These activities may vary based on the service or product request, the type of customer, location of delivery and several other factors. The time to complete any activity and its variations is treated as an additive factor, therefore representing them as additive linear equation is sufficient. Time equations in TD-ABC are a representative of the services offering of a department or unit (Kaplan & Anderson, 2007).

Kaplan and Anderson reiterated that Time equations are the first requirement in creation of the TD-ABC model; the time obtained per cost objects is applied to the cost rate for the unit that provides the service or product to obtain the cost. The second requirement is the capacity cost rate. Capacity cost rate is the ratio of the departmental or unit cost (numerator) to the practical capacity (denominator) of the department or unit; this cost rate is used to derive the cost of orders, products and customers. The departmental cost consists of the total employee compensation, occupancy, technology and corporate support. The practical capacity is the available

resource that can be applied to perform an activity after deductions due to inherent constraints. The process uses mathematical formula to calculate time costs. The generalized formula of time equation given by Kaplan and Anderson (2004) is shown below;

$$T\beta = \beta 0 + \beta 1X1 + \ldots + \beta n\, Xn$$

Where:

Tβ – the time needed to perform activity β,

β0 – standard time for performing the basic activity,

βi – the estimated time for the incremental activity i, (i =1,…,n),

Xi – the quantity of incremental activity i, (i =1,…,n),

The above equation is in the form y = a + bx;

Where: y is the dependent variable and

x is the independent variable;

a and b are the intercept and slope respectively.

Therefore the time equation can be viewed as a form of linear Regression equation. There can be more than one independent variable in a time equation. To simplify calculations, all independent variable should be fixed except the one being compared to the dependent variable (the time to perform the activity in equation). As mentioned above the cost of any activity is calculated by multiplying the time needed with the cost per time unit. This formula indicates that time drivers can have a continuous or a discrete character are the variables that determine the time needed for executing an activity are very crucial element of this method.

Kaplan and Anderson (2007a) outlined two steps in implementation of Time Driven Activity Based Costing: *"First, it calculates the costs of supplying resource capacity, it divides this total cost by the capacity of the department to obtain the capacity cost rate. Second, TDABC uses the capacity cost rate to drive departmental resource costs to cost objects by estimating the demand for resource capacity (typically time, from which the name of the new approach was chosen) that each cost object requires."*

Kaplan & Anderson, (2004), argued that the essence of activity-based costing and activity- based management is the measurement of the organizations' capacity. To this

end TD-ABC systems requires two estimates: the unit cost of supplying capacity and the consumption of capacity (unit times). This approach starts by estimating the cost of supplying capacity. This means all the resources required to enable the performance of the varying activity or services are identified. The sum of all these resources in monetary terms is calculated per given period. This cost system also calls for the estimation of the practical capacity of the resources supplied. Theoretically, the capacity under traditional ABC is put at 100% but under TD-ABC emphasis is on estimating practical capacity than the theoretical capacity. Practical capacity is therefore estimated at 80% of theoretical capacity. This estimate allows for 20% of employee time for say breaks, answering calls, arrival and departure and other things unrelated to actual work performance. If it is a machine, the same time is given for downtime due to maintenance, repair, and scheduling functions. The basic objective in all ABC design is to be approximately right so the analysis is not greatly sensitive to small errors in estimating parameters. With estimates of the cost of supplying capacity and practical capacity, unit cost can be calculated by dividing cost of capacity supplied over the practical capacity of resources supplied. Under TD-ABC there is a need to estimate the time required to perform a transactional activity/service. This can be obtained either by direct observation or by interviews. Precision is not critical; rough accuracy is sufficient. In general, not all small business services are the same and require the same amount of time to provide. TD-ABC approach estimates the total resource (time) demanded to render each service by a simple equation generally called *"Time Equation"*. This equation is the sum of all the time taken to render whichever type of service to a particular customer.

Kaplan and Anderson identified the stage wise essential components of TD-ABC in its implementation as under:

1. Define activities, activity costs pools and activity measures.
2. Define Cost of Capacity Supplied
3. Define Practical Capacity
4. Determine Capacity Cost Rate
5. Estimate Time Consumption.

3.2.5.1. Define activities, activity costs pools and activity measures on the basis of ABC interviews

In the mathematical model developed for Parakh Laboratory the activities were considered on the basis of various activities suggested by Cokins. A list of operational activities need to be developed that captures all activities done to provide the services or products to develop time equations and assign resource consumption to each cost objects. The services that a department offers should be listed and then broken down into sub-services and then to activities and any variations of these activities. The time determined to carry out these activities has some tolerance and the model will not be too affected (Cokins, 2001); however, the time can be verified by directly measuring the time it takes to perform an activity a few times and an average can be determined. ABC interviews are the most important part of activity-based costing. They help to understand which activities organisation performs and how do they affect expenses. On the basis of interviews and observations following activities and drivers were identified in the Parakh laboratory:

Table 3.1

The Activities observed in the Parakh Laboratory

Activity	**Driver**
Registration of Patient	No. of patient for Testing
Cash Collection	No. of patient based on Test
Sampling	Sample preparation for Test
Analysis of Sample / Testing	Types of Test performed
Report preparation	No. of patient for Testing
Delivery of Report	No. of patient for Testing

The above table shows various activities performed in the laboratory like registration of patient for testing, cash collection, sample taking, analysis of sample i.e. testing, report preparation, delivery of report and then cost driver i.e. factor which drives each activity on the basis of observation and interviews conducted with management were selected.

3.2.5.2. Define Cost of Capacity Supplied

The cost information has been gathered from the detailed analysis of cost records of the laboratory. The cost of each activity center based on objectives are further classified in to Human Resource costs, Cost of consumables, Outsourcing of work, Depreciation costs, Business Promotion expenses and other overhead costs. All the costs associated with laboratory were summarized as follows:

Table 3.2

The Cost Structure of Parakh Laboratory

Costs	**Amount Rs.**
Human Resource costs	81,450
Consumables	88,404
Outsourcing of work	58,900
Depreciation	54,158
Business Promotion	80,000
Other Overhead	36,058
Total	4,04,970

The above table reflects various cost incurred in the laboratory like human resource costs which includes salary and other amenities to staff, consumables used in laboratory, outsourcing of work as some of the tests are not performed in the laboratory, depreciation of various assets used in laboratory, business promotion expenses like advertisement and commission and other overheads like electricity, duties, taxes, rates, water charges etc.

3.2.5.3. Define Practical Capacity

Time equation is developed on the basis of practical capacity. The Practical Capacity of Laboratory depends on the number of laboratory staff, average numbers of working days and useful time per day. The number of laboratory staff was 5 and working for 8 hours per day. The average working days in the year were 350days and the average idle time for say breaks, answering calls, arrival and departure and other things unrelated to actual work performance, maintenance hours, repair, and scheduling functions etc., deducted per employee was 1.10 hours. Useful time per day estimated is 6.90 hours.

Practical capacity	=	Effective Working Hours * Effective Working Days in a Year * No. of Employees
Practical capacity	=	6.90 hours * 350 days *5 employees
	=	12075 hours
Practical capacity in minutes	=	12075hours*60minutes per hour
	=	7, 24,500minutes.

Total effective time available is 7, 24,500 minutes.

3.2.5.4. Determine Capacity Cost Rate

For framing time equation in the earlier step the capacity in terms of time is calculated, next step is to determine capacity cost rate. For this purpose the capacity cost of each unit is calculated by dividing the total cost of capacity supplied by the practical capacity of resources.

Capacity Cost Rate	=	Cost of Capacity Supplied / Practical Capacity of Resources Supplied
	=	Rs. 4, 04,970 / 7, 24,500 minutes.
	=	0.55896480
	=	Re.0.559 per minute.
Unit Cost	=	Cost per Activity
	=	Capacity cost rate * Unit time
Unit Time	=	Actual time needed to perform the activity

Capacity cost rate is Re. 0.559 per minute.

3.2.5.5. Estimation of the Capacity Requirement of Various Activities for Time Equation

As defined by Kaplan and Anderson one of the essential components of TD-ABC is the estimation of capacity requirement for the various activities carried out at the Parakh laboratory. Hence, this stage deals with the calculation of capacity requirement of various activities as it is an important component in development of time equation. To calculate capacity requirement, approximate average time for each activity was calculated on the basis of observations and interviews conducted. Parakh Laboratory carries out different types of tests for the client patients. Each test

consumes different time for analysis so time requirement for various activities and analysis of tests/ sample is separately presented here under:

Table 3.3

Statement of Time Requirement for Various Activities at Parakh Laboratory

Sr. No.	Activity	Driver	Duration (minutes)
1	Registration of Patient	No. of patient for Testing	03.00
2	Cash Collection	No. of patient based on Test	01.50
3	Sampling	Sample preparation for Test	05.00
4	Analysis of Sample / Testing	Types of Test performed:	
		Biochemistry	60.00
		Hormone	240.00
		Serology	60.00
		Parasitology	55.00
		Hematology	30.00
		Microbiology	50.00
5	Report preparation	No. of patient for Testing	28.00
6	Delivery of Report	No. of patient for Testing	01.50

The above table indicates activities performed in the laboratory and time requirement to perform various activities like for registration of patient for testing requires approximately 3 minutes time and it is driven by no. of patients for testing, after registration from each patient 1.5 minutes time required for cash collection. In the next step sample collection procedure is carried out which takes approximately 5 minutes time and it is driven by sample preparation for Test. First three steps are common for all the patients and required time for each of these steps is calculated by observation. For this purpose one day researcher spent five hours at the laboratory for calculation of average time required for each of these activities through observation.

Practical testing of sample starts after collection. Testing and Analysis process differs test to test and time requirement depends on type of test to be carried out. For this purpose, technical requirements as well as procedure process are the main factors affecting time requirement for the test. Hence, time required for different test is calculated by studying technical manuals and observing procedure carried out to perform the test. Finally, report preparation requires reading of results, data feeding in computer and printing of the report which is more or less remains common for all the

patients. Time requires for test preparation little varies depending on the size of data for the different test. But it doesn't affect much. Average time requirement for report preparation for each test each patient is calculated by observation, which is an average 28 minutes per report per patient. The report delivery to patient consumes 1.5 minutes per patient.

3.2.5.6. Determination of Activity Cost

After calculating time duration for each of the activity carried out, this part of the study deals with the development of time equitation for various activities performed at the Parakh Laboratory. This is done to calculate the activity cost for each of the activity identified and appears at the activity inventory.

Calculation of Time duration for each activity, total available capacity in terms of time (i.e. total available time), calculation of capacity cost rate i.e. time rate and identification of cost drivers help to calculate activity cost for each activity by applying capacity cost rate per minute to the duration for each activity. Thus, the activity cost is calculated for each of the activity identified at the Parakh laboratory by applying activity cost rate per minute and time required per activity. The activity cost calculated for each of the identified activity presented here in the following Table No. 3.4.

Table 3.4

Statement of required Time and Resource Costs at Parakh Laboratory

Sr. No.	Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate Rs.	Total Cost Rs.	Activity Cost Driver Rate
1	Registration of Patient	03.00	3512	10536	0.559	5889.60	1.68
2	Cash Collection	01.50	3512	5268	0.559	2944.80	0.84
3	Sampling	05.00	8780	43900	0.559	24540.10	2.80
4	Analysis of Sample / Testing						
	Biochemistry	60.00	3477	208620	0.559	116618.60	33.54
	Hormone	240.00	318	76320	0.559	42662.90	134.16
	Serology	60.00	1370	82200	0.559	45949.80	33.54
	Parasitology	55.00	1375	75625	0.559	42274.40	30.75
	Hematology	30.00	1157	34710	0.559	19402.90	16.77
	Microbiology	50.00	984	49200	0.559	27502.80	27.95
	Total		8681			294411.40	33.91
5	Report preparation	28.00	3512	98336	0.559	54969.80	15.65
6	Delivery of Report	01.50	3512	5268	0.559	2944.80	0.84
7	Total Used Capacity			689983	0.559	385700.50	

The aforesaid table reflects various activities performed in the laboratory, time required to perform each activity, activity driver, total time consumed by each activity, total cost of each activity on the basis of time equation and the activity cost driver rate for each of the identified activity (total cost of an activity/ Driver). It also shows total time and resources used. The above table shows that total 3,512 patients were registered for various tests from which 8780 samples were collected. Out of the total collected sampling 3,477 Biochemistry test, 318 Hormone test, 1,370 Serology test, 1,375 Parasitology, 1,157 Hematology, 984 Microbiology test were tested and analyzed. Accordingly 3,512 reports were prepared and delivered to patients. Activity wise used capacity cost and total used capacity is Rs. 385,700.50 with 6,89,983 minutes. Activity wise used capacity cost and total capacity used helps to derive cost of unused capacity which is presented as under:

Table 3.5

Statement of used and unused Costs of capacity at Parakh Laboratory

Activity	Total Time (minutes)	Capacity Cost Rate Rs.	Total Cost Rs.
Practical capacity and cost of capacity supplied (as per point no. 3.2.4.2 and 3.)	724500	0.559	404970
Activity wise Total Used Capacity	689983	0.559	385700.50
Unused Capacity	34517		19269.50

The above table also shows total practical capacity and cost of capacity supplied is Rs. 4,04,970 with 7,24,500 minutes out of which activity wise used capacity cost and total used capacity is Rs. 385,700.50 with 6,89,983 minutes and unused capacity cost and total unused capacity Rs. 19,269.50 with 34,517 minutes.

3.2.5.7. Determination of Total Cost of Cost Objects (Tests) by TD-ABC

After developing time equation as per above step, calculation of resource cost and activity cost, costs of various Cost Objects (Tests) were calculated by TD-ABC using cost rate and activities consumed.

3.2.5.7.1. Total Cost of Biochemistry Test

On the basis of Time Driven Activity Based Costing model total cost of Biochemistry Test is calculated as under:

Table 3.6

Statement of Costs estimated on Biochemistry Test under TD-ABC

Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.	Activity Cost Driver Rate
Registration of Patient	03.00	1405	4215	0.559	2356.19	1.68
Cash Collection	01.50	1405	2107.5	0.559	1178.09	0.84
Sampling	05.00	3519	17595	0.559	9835.61	2.80
Analysis of Sample / Testing	60.00	3477	208620	0.559	116618.58	33.54
Report preparation	28.00	1405	39340	0.559	21991.06	15.65
Delivery of Report	01.50	1405	2107.5	0.559	1178.09	0.84
Total			273985	0.559	153157.62	

The above table shows the total Costs incurred on Biochemistry Test using Time Driven Activity Based Costing Model. Total 1,405 patients were registered for Biochemistry test from which 3,519 samples were collected out of which 3,477 samples were tested and analyzed and 1,405 reports were prepared and delivered to the patients. The total cost chargeable to Biochemistry Test is Rs. 1, 53,157.62 and total time spent was 273985 minutes. Out of this Rs. 2,356.19 is cost and 4215minutes were used for registration related activity, Rs. 1178.09 is cost and 2107.5 minutes were spent for cash collection activity, Rs.9, 835.61iscost and 17,595 minutes were spent for sample preparation for test, Rs. 116618.58 is costand208620 minutes were spent for analysis of sample activity, Rs. 21991.06 is cost and 39340 minutes were spent on report preparation activity and Rs. 1178.09 is cost and 2107.5 minutes were spent for delivery of report.

3.2.5.7.2. Total Cost of Hormone Test

On the basis of Time Driven Activity Based Costing model Total Cost of Hormone Test is calculated as under:

Table 3.7
Statement of Costs estimated on Hormone Test under TD-ABC

Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.	Activity Cost Driver Rate
Registration of Patient	03.00	140	420	0.559	234.78	1.68
Cash Collection	01.50	140	210	0.559	117.39	0.84
Sampling	05.00	320	1600	0.559	894.40	2.80
Analysis of Sample / Testing	240.00	318	76320	0.559	42662.88	134.16
Report preparation	28.00	140	3920	0.559	2191.28	15.65
Delivery of Report	01.50	140	210	0.559	117.39	0.84
Total			82680	0.559	46218.10	

The above table shows the total Costs incurred on Hormone Test using Time Driven Activity Based Costing Model. Total 140 patients were registered for Hormone test from which 320 samples were collected out of which 318 samples were tested and analyzed and 140 reports were prepared and delivered to the patients. The total cost

chargeable to Hormone Test is Rs. 46,218.10 and total time spent was 82,680 minutes. Out of this Rs. 234.78 is cost and 420 minutes were used for registration related activity, Rs. 117.39 is cost and 210 minutes were spent for cash collection activity, Rs. 894.40 is cost and 1600 minutes were spent for sample preparation for test, Rs.42, 662.88 is cost and 76,320 minutes were spent for analysis of sample activity, Rs. 2191.28is cost and 3920 minutes were spent for report preparation activity and Rs. 117.39 is cost and 210 minutes were spent for delivery of report.

3.2.5.7.3. Total Cost of Serology Test

On the basis of Time Driven Activity Based Costing model Total Cost of Serology Test is calculated as under:

Table 3.8
Statement of Costs estimated on Serology Test under TD-ABC

Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.	Activity Cost Driver Rate
Registration of Patient	03.00	562	1686	0.559	942.47	1.68
Cash Collection	01.50	562	843	0.559	471.24	0.84
Sampling	05.00	1387	6935	0.559	3876.67	2.80
Analysis of Sample / Testing	60.00	1370	82200	0.559	45949.80	33.54
Report preparation	28.00	562	15736	0.559	8796.42	15.65
Delivery of Report	01.50	562	843	0.559	471.24	0.84
Total			108243	0.559	60507.84	

The above table shows the total Costs incurred on Serology Test using Time Driven Activity Based Costing Model. Total 562 patients were registered for Serology test from which 1,387 samples were collected out of which 1,370 samples were tested and analyzed and 562 reports were prepared and delivered to the patients. The total cost chargeable to Serology Test is Rs.60, 507.84 and total time spent was 108243 minutes. Out of this Rs. 942.47 is cost and 1686 minutes were used for registration related activity, Rs.471.24 is cost and 843 minutes were spent for cash collection activity, Rs. 3,876.67 is cost and 6935 minutes were spent for sample preparation for

test, Rs.45, 949.80is cost and 82,200 minutes were spent for analysis of sample activity, Rs.8796.42 is cost and 15,736 minutes were spent in report preparation activity, and Rs. 471.24 is cost and 843 minutes were spent for delivery of report.

3.2.5.7.4. Total Cost of Parasitology Test

On the basis of Time Driven Activity Based Costing model Total Cost of Parasitology Test is calculated as under:

Table 3.9
Statement of Costs estimated on Parasitology Test under TD-ABC

Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.	Activity Cost Driver Rate
Registration of Patient	03.00	562	1686	0.559	942.47	1.68
Cash Collection	01.50	562	843	0.559	471.24	0.84
Sampling	05.00	1386	6930	0.559	3873.87	2.80
Analysis of Sample / Testing	55.00	1375	75625	0.559	42274.38	30.75
Report preparation	28.00	562	15736	0.559	8796.42	15.65
Delivery of Report	01.50	562	843	0.559	471.24	0.84
Total			101663	0.559	56829.62	

The above table shows the total Costs incurred on Parasitology Test using Time Driven Activity Based Costing Model. Total 562 patients were registered for Parasitology test from which 1,386 samples were collected out of which 1,375 samples were tested and analyzed and 562 reports were prepared and delivered to the patients. The total cost chargeable to Parasitology Test is Rs.56, 829.62 and total time spent was 1, 01,663 minutes. Out of this Rs.942.47 is cost and 1,686 minutes were used for registration relating activity, Rs.471.24 is cost and 843 minutes were spent on cash collection activity, Rs. 3,873.87 is cost and 6,930 minutes were spent for sample preparation for test, Rs.42, 274.38 is cost and 75,625 minutes were spent for analysis of sample activity, Rs.8, 796.42 is cost and 15,736 minutes were spent for Report preparation activity and Rs. 471.24 is cost and 843 minutes were spent for delivery of report activity.

3.2.5.7.5. Total Cost of Hematology Test

On the basis of Time Driven Activity Based Costing model Total Cost of Hematology Test is calculated as under:

Table 3.10
Statement of Costs estimated on Hematology Test under TD-ABC

Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.	Activity Cost Driver Rate
Registration of Patient	03.00	457	1371	0.559	766.39	1.68
Cash Collection	01.50	457	685.5	0.559	383.19	0.84
Sampling	05.00	1173	5865	0.559	3278.54	2.80
Analysis of Sample / Testing	30.00	1157	34710	0.559	19402.89	16.77
Report preparation	28.00	457	12796	0.559	7152.96	15.65
Delivery of Report	01.50	457	685.5	0.559	383.19	0.84
Total			56113	0.559	31367.17	

The above table shows the total Costs incurred on Hematology Test using Time Driven Activity Based Costing Model. Total 457 patients were registered for Hematology test from which 1,173 samples were collected out of which 1,157 samples were tested and analyzed and 457 reports were prepared and delivered to the patients. The total cost chargeable to Hematology Test is Rs.31, 367.17 and total time spent was 56,113 minutes. Out of this Rs.766.39 is cost and 1,371 minutes were used for registration relating activity, Rs.383.19 is cost and 685.5 minutes were spent for cash collection activity, Rs.3,278.54 is cost and 5,865 minutes were spent for sample preparation for test, Rs. 19,402.89 is cost and 34,710 minutes were spent for analysis of sample activity, Rs.7, 152.96 is cost and 12,796 minutes were spent for report preparation activity and Rs. 383.19 is cost and 685.5 minutes were spent for delivery of report Activity.

3.2.5.7.6. Total Cost of Microbiology Test

On the basis of Time Driven Activity Based Costing model Total Cost of Microbiology Test is calculated as under:

Table 3.11
Statement of Costs estimated on Microbiology Test under TD-ABC

Activity	Duration (minutes)	Driver	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.	Activity Cost Driver Rate
Registration of Patient	03.00	386	1158	0.559	647.32	1.68
Cash Collection	01.50	386	579	0.559	323.66	0.84
Sampling	05.00	995	4975	0.559	2781.03	2.80
Analysis of Sample / Testing	50.00	984	49200	0.559	27502.80	27.95
Report preparation	28.00	386	10808	0.559	6041.67	15.65
Delivery of Report	01.50	386	579	0.559	323.66	0.84
Total			67299	0.559	37620.20	

The above table shows the total Costs incurred on Microbiology Test using Time Driven Activity Based Costing Model. Total 386 patients were registered for Microbiology test from which 995 samples were collected out of which 984 samples were tested and analyzed and 386 reports were prepared and delivered to the patients. The total cost chargeable to Microbiology Test is Rs.37, 620.20 and total time spent was 67,299 minutes. Out of this Rs.647.32 is cost and 1,158 minutes used for admission relating activity, Rs.323.66 is cost and 579 minutes were spent for cash collection activity, Rs. 2,781.03 is cost and 4,975 minutes were spent for sample preparation for test, Rs.27, 502.80 is cost and 49,200 minutes were spent for analysis of sample activity, Rs.6, 041.67is cost and 10,808 minutes were spent for report preparation activity and Rs. 323.66 is cost and 579 minutes were for delivery of report.

3.2.5.8 Total Cost of cost objects, Used Capacity and Unused Capacity

After calculating Total cost for each cost object on the basis of activities consumed, total cost of Used and Unused capacity cost calculated with the help of Time Driven Activity Based model.

Table 3.12
Statement of estimated Annual Costs on various Tests/Cost Objects under TD-ABC

Sr. No.	Cost Object	Total Time (minutes)	Capacity Cost Rate	Total Cost Rs.
1	Biochemistry	273985	0.559	153157.62
2	Hormone	82680	0.559	46218.10
3	Serology	108243	0.559	60507.84
4	Parasitology	101663	0.559	56829.62
5	Hematology	56113	0.559	31367.17
6	Microbiology	67299	0.559	37620.20
7	Used Capacity	689983	0.559	385700.50
8	Unused Capacity	34517		19269.50
9	Total Capacity	724500	0.559	404970.00

The above statement indicates total cost of various tests by using various activities under TDABC method and total cost of used capacity and unused capacity. Unused cost is the difference between cost of capacity supplied and cost of capacity consumed or used for providing various tests performed. Approximately 95.24% of the capacity is used with Rs. 3, 85,700.50 is cost and 6, 89,983 minutes were spent and 4.76% of capacity is unused with the cost of Rs. 19,269.50 and 34,517 minutes were unused.

3.2.5.9. Determination of Cost per Test: After calculating total cost of various tests (Cost Objects) under TDABC, cost per test is calculated by dividing total cost with no. of tests performed in that period. The following statement shows calculation of cost per test on the basis of activities consumed by each test and total cost of each test.

Table 3.13

Statement of Cost per Test

Activity	Analysis of Sample / Testing (Cost Objects)						Total Rs.	Driver	Activity Cost Driver Rate
	Biochemistry	Hormone	Serology	Parasitology	Hematology	Microbiology			
Registration of Patient	2356.19	234.78	942.47	942.47	766.39	647.32	5889.60	3512	1.68
Cash Collection	1178.09	117.39	471.24	471.24	383.19	323.66	2944.80	3512	0.84
Sampling	9835.61	894.40	3876.67	3873.87	3278.54	2781.03	24540.10	8780	2.80
Analysis of Sample / Testing	116618.58	42662.88	45949.80	42274.38	19402.89	27502.80	294411.00	8681	*
Report preparation	21991.06	2191.28	8796.42	8796.42	7152.96	6041.67	54969.80	3512	15.65
Delivery of Report	1178.09	117.39	471.24	471.24	383.19	323.66	2944.80	3512	0.84
Total	153157.62	46218.12	60507.84	56829.62	31367.17	37620.14	385701.00		
No. of Test	3477	318	1370	1375	1157	984	8681		
Cost per Test	**44.05**	**145.34**	**44.17**	**41.33**	**27.11**	**38.23**	**44.43**		

*Cost per Analysis of Sample/Testing (Analysis of Sample or Testing cost / No. of Test)	Biochemistry	Hormone	Serology	Parasitology	Hematology	Microbiology
	33.54	134.16	33.5	30.75	16.77	28

3.2.5.10. Determination of Profitability of each Test: On the basis of total Revenue, total cost and profit, Profitability of various tests are calculated.

Table 3.14

Statement of Profitability of each Test

Particulars	Analysis of Sample / Testing						Total Rs.
	Biochemistry	Hormone	Serology	Parasitology	Hematology	Microbiology	
No. of Test	3477	318	1370	1375	1157	984	
Rate/ Charge Per Test (Rs.)	120	250	120	100	200	50	
Cost Per Test (Rs.)	44.05	145.34	44.17	41.33	27.11	38.23	
Total Revenue (Rs.)	417240	79500	164400	137500	231400	49200	1079240.00
Total Cost (Rs.)	153157.6	46218.1	60507.8	56829.6	31367.2	37620.2	385700.50
Total Profit (Rs.)	264082.4	33281.9	103892	80670.4	200032.8	11579.8	693540.00
Profit Per Test (Rs.)	75.95	104.66	75.83	58.67	172.89	11.77	
Profitability of Test (%)	63.29	41.86	63.19	58.67	86.44	23.54	64.26

The aforesaid table reflects that during the year total 3477 Biochemistry tests were conducted with average cost of Rs. 44.05 per test against charges of Rs. 120 per test and fetched profit of Rs. 75.95 per test, 318 Hormone tests were conducted with average cost of Rs. 145.34 against charges of Rs. 250 per test and provides profit of Rs. 104.66 per test, 1370 serology Test were conducted with Rs. 120 charges per test and 44.17 cost per test gained Rs. 75.83 profit per test. In case of Parasitology tests Laboratory earned profit of Rs. 58.67 per test and profit earned by

Hematology test was highest with minimal cost Rs. 27.11 against charges of Rs. 200 whereas Microbiology test provided Profit of Rs. 11. 74 per test for 984 tests performed. The above statement also shows that profitability of Hematology is 86.44% which is the highest followed by Biochemistry 63.29%, Serology 63.19%, Parasitology 58.67%, Hormone 41.86% and Microbiology 23.54%. Overall profitability is 64.26%.

3.2.6. Findings and Conclusion

The main objective of this case study is to check the possibilities and process of applying Time Driven Activity Based Costing Model in service sector that is for Parakh Laboratory. TD-ABC helps to calculate Activity Cost and cost of used capacity, it also helps in accurate measurement of cost with following process:

- ✓ Find out unused capacity
- ✓ Calculate cost of unused capacity with the help of TD-ABC
- ✓ Identifying cost objects and its resource consumption
- ✓ Identifying cost of cost objects

The process helps to identify and deal with the cost of unused capacity. Organisation can take steps to minimize unused capacity and improve its performance and profit. It also helps to identify cost and profit as well as profitability for each of the output or service provided. On the basis of the profitability of various tests laboratory management can take decision like, price reduction to remain competitive, bought out service as and when required by particular type of test after comparing with cost of performing test, utilizing unused capacity effectively etc.

Following are the findings that came up while conducting the study of Parakh Laboratory:

i. At present overall profit for the organisation as a whole is calculated as reflected by the financial statements prepared annually. Service or test wise cost and profit are not calculated.
ii. At present service or test wise resource consumption is not identified.
iii. Resource cost drivers as well as service cost drivers are not identified.
iv. Traditional volume based costing is followed.
v. Customer profitability is not known at present.

vi. Process cost is not known.

vii. Single process results in producing more than one output.

viii. Single cost produces multiple outputs.

ix. Single process uses multiple resources as well as multiple processes.

x. Accurate cost calculation for each activity and output is a challenging task.

xi. The problem very categorically observed was in terms of allocation and absorption of costs due to the finding that there were various integrated and inter-related and inter-dependent processes.

xii. It was found that poor costing system has adverse influence on pricing and quality of service rendered which led to poor decision making affecting the sustainability of the laboratory.

xiii. Without a proper understanding of cost the laboratory was unable to link cost to process improvements or outcomes leaving behind a poor pricing system so, making systemic and sustainable cost reductions & services emerged as a huge challenge. This finding established that there is a dire need of introducing a cost system which resolves the challenges before the management.

xiv. To use TD-ABC, Mathematical time driven equation designed especially for the laboratory was used to calculate total time, cost and cost driver rate of various activities.

xv. Application of TD-ABC in the laboratory following calculations are made:

   a. Total effective time available to perform various activities is 7, 24,500 minutes
   b. Total cost incurred to run the Laboratory isRs.4,04,970
   c. With the help of time equation Capacity cost rate Re. 0.559 per minute is calculated
   d. Activity wise used capacity and cost as well as cost rate is calculated as under :

Table 3.15
Statement of estimated used capacity and Cost and Rate on various Activities

Sr. No.	Activity	Total Time (minutes)	TotalCostRs.	Activity Cost Driver Rate
1	Registration of Patient	10536	5889.60	1.68
2	Cash Collection	5268	2944.80	0.84
3	Sampling	43900	24540.10	2.80
4	Analysis of Sample / Testing			
	Biochemistry	208620	116618.60	33.54
	Hormone	76320	42662.90	134.16
	Serology	82200	45949.80	33.54
	Parasitology	75625	42274.40	30.75
	Hematology	34710	19402.90	16.77
	Microbiology	49200	27502.80	27.95
	Total		294411.40	33.91
5	Report preparation	98336	54969.80	15.65
6	Delivery of Report	5268	2944.80	0.84
	Total Used Capacity	689983	385700.50	

e. Test/ cost object wise used capacity and cost is calculated as under :

Table 3.16
Statement of estimated used capacity and Cost on various Tests

Sr. No.	Cost Object	Total Time (minutes)	Total Cost Rs.
1	Biochemistry	273985	153157.62
2	Hormone	82680	46218.10
3	Serology	108243	60507.84
4	Parasitology	101663	56829.62
5	Hematology	56113	31367.17
6	Microbiology	67299	37620.20
7	Used Capacity	689983	385700.50

f. Approximately 95.24% of the capacity is used with Rs. 3, 85,700.50 cost and 6, 89,983 minutes and 4.76% of capacity is unused with the cost of Rs. 19,269.50 and 34,517 minutes.

The information regarding unused capacity is helpful in decision making regarding accepting job work and makes efforts to use at out counter.

xvi. TD-ABC helps to calculate accurate cost of each test individually which can be reliably used in pricing decision, this in turn helps to evaluate output wise or test wise profitability as presented in table number 3.17.

Table 3.17
Statement of Profitability of various tests

Cost Object	Rate/ Charge Per Test (in Rs.)	Cost Per Test (in Rs.)	Profit Per Test (in Rs.)	Profitability (in %)
Biochemistry	120	44.05	75.95	63.29
Hormone	250	145.34	104.66	41.86
Serology	120	44.17	75.83	63.19
Parasitology	100	41.33	58.67	58.67
Hematology	200	27.11	172.89	86.44
Microbiology	50	38.23	11.77	23.54

The above table reflects the rate per test collected (revenue), cost of individual test, profit and profitability calculated individually for each test performed at Laboratory. For further discussion, profitability identified as high, moderate or low. Profitability 60 % and above is considered as higher profitability, 40% to less than 60% considered as moderate profitability and less than 40% considered as low profitability.

After applying TD-ABC it was revealed that Profitability for Hematology is 86.44% which is the highest followed by Biochemistry 63.29%, Serology 63.19%. Profit and profitability per test is considered as moderate in case of Parasitology and Hormone which are calculated at 58.67%and 41.86%respectively. In case of Microbiology profit and profitability is low at 23.54% per test.

From the analysis it was observed that there might be cross cost subsidization in cost calculation for the pricing at the Parakh Laboratory, this is reflected in the cost and price/rate of Hematology Test. Laboratory charged Rs. 200 per test whereas cost of performing test is Rs. 27.11. This indicates that to remain competitive in the market, price reduction program can be exercised for this type of test and can attract more test jobs. The same is reflected in the case of Biochemistry, Laboratory charged Rs. 120 per test whereas cost of performing

test is Rs.44.05. Serology Laboratory charged Rs. 120 per test whereas cost of performing test is Rs.44.17 and Parasitology test Laboratory charged Rs. 100 per test whereas cost of performing test is Rs.41.33.

xvii. TD-ABC model is helpful in minimizing unused capacity by utilizing unused capacity productively and can improve its performance as well as profit.

xviii. On the basis of above discussion, research suggest

a. The management accepted that TD-ABC is easy and fast to implement, inexpensive, fast to update and it resolves the complexities of laboratory.
b. Consequently, the calculation of reliable and accurate cost and the identification of value added activities have proven to be of greater significance in the laboratory.
c. TD-ABC can be used as a tool of cost ascertainment and control to provide detail cost information to control current operations and plan for the future.
d. On the basis of the profitability of various tests laboratory can take decision for bought out services for particular type of Test.
e. Effectively utilization of the unused capacity for job work can help to increase profitability.
f. With the help of accurate cost per test and profitability per test pricing of various tests can be reviewed and by reducing price more patients can be attracted or business from other laboratory can be attracted as job work at reduced rate.
g. TD-ABC can work as total quality management tool, as it helps to know about various activities performed, its capacity and capacity cost, activity consumed by the tests and its cost and profitability.
h. TD-ABC also works as process improvement, as development model requires information about activities, its time and resource consumption.

On the basis of the findings and analysis it can be concluded that Activity-based costing (ABC), as a management accounting tool provides accuracy in cost ascertainment as well as improvement in efficiency, effectiveness, and quality of cost information and profitability in Health Care (Laboratory).

3.3. CASE-II: The Government Servants Co-operative Credit Society Limited

3.3.1. Introduction

The co-operative movement in India is more than a century old commenced with the establishment of *'Anyonya Sahakari Mandali'* in Gujarat at Baroda on February 05, 1889. Thus, the organisation of co-operative institutions in India dates back to 19th century. The regulation thereof is also more than a century old with the first major impetus provided by the passing of the Co-operative Society Act in 1904. The co-operatives have come a long way and have seen many ups and downs since then; they have played the pivotal role in financial inclusion by taking care of banking and credit needs of the lower and middle strata of society in the length and breadth of India, more specifically even in the remote villages.

Cooperative banks are unique in terms of their structure, clientele and credit delivery. Co-operatives are organized groups of people and jointly managed and democratically controlled enterprises. They exist to serve their members and depositors and produce better benefits and services for them. Professionalism in co-operative banks reflects the co-existence of high level of skills and standards in performing, duties entrusted to an individual. Co-operative bank needs current and future development to keep pace with the fast changing information technology. It is indeed necessary for cooperative banks to devote adequate attention for maximizing their returns on every unit of resources through effective services.

Traditionally, the co-operative structure is divided into two parts viz. rural and urban. The three tier Short Term Cooperative Credit Structure (STCCS) consists of more than 90,000 Primary Agricultural Credit Societies (PACS), 367 District Central Cooperative Banks (DCCBs) and 33 State Cooperative Banks (StCBs) whereas the urban side is dotted with 1579 Urban Cooperative Banks (UCBs). Even with such a large number of co-operative banks, considering the total asset size, their share in the Indian banking sector is not more than 5%. Thus, it may be observed that the true potential of co-operative banks is yet to be tapped.

The resilience and stability shown by these banks during the recent global financial crisis has underscored their importance in the financial system of both developed and emerging market economies. Despite their inherent weaknesses in terms of low capital, poor management and intrusive policies of State, cooperative banks in India have successfully weathered several challenges during their century old existence and continued to grow in the competitive environment which emerged following the Economic and Financial Sector Reforms initiated in 1991.

3.3.2. The Cost Structure of Banking Institutions

Sloane (1991) and Sapp, Rebischkeei al., 1991(cited in Carenys and Sales 2008) have highlighted some of the features of the banking business which can affect the cost structure of its costing systems.

The volume of operations fluctuates enormously from one moment to the next, which obviates the problem of capacity management, given that at certain times there are "peaks" whilst at other times there are "valleys" which means that these resources are underused. Resources are usually allocated to cover "peaks" of activity. However, the cost of these resources does not vary with the volume of transactions, because they have a large fixed component. Although the demand for services tends to be highly variable, it is relatively easy to predict, because it follows a cyclic behaviour pattern, which offers the possibility of turning part of fixed costs into variable ones by means of outsourcing. A comparison can be drawn between the high volume of repetitive operations in banking institutions and traditional industrial mass commodity manufacturing, which facilitates the use of methodologies that originated in industry and the setting up of a standard costing system. The banking product is physically indefinable which makes it more complex to identify. For example, when a banking institution issues a loan to a customer, the latter must open up a current account to meet the loan payments. If on top of this the customer orders a cheque book on his current account and takes out a life insurance policy, we have four interrelated products. Given that we are dealing with joint production activities with elevated fixed and indirect costs there are many resources that are shared by activities, customers, products and centres of responsibility.

Indirect cost plays more significant role in relation to cost objects and makes it difficult to trace them in relation to cost objects. Large part of the operations carried out by banking institutions are of a repetitive nature and susceptible to standardization, this makes it feasible to consider calculating the costs of these operations and allocating them to cost objects, and to introduce the use of standard costs as a planning and control instrument.

3.3.3 Need for New Approach

RBI has initiated several policy measures to strengthen the cooperative banking sector by gradually introducing the prudential norms and regulatory prescriptions at par with commercial banks. Cooperative banks are now functioning in a highly competitive environment. Entry of more players in the banking arena has increased options to customers and banks have both opportunities to grow and challenges for survival. This compels businesses to discover more efficient ways of doing business.

Cooperative banks require improving their bottom line through internal accruals without relying on frequent bouts of capital infusion by the government. They should review their pricing policies on deposits and loans, appraisal systems, recovery procedures, major expenditure items and devise suitable action plan to plug leakages and augment income.

Cooperative banks require good cost accounting system for detailed cost information that management needs to control current operations and function profitably. Cooperative banks require information to achieve its goals in an optimal manner, to serve the core needs of internal business managers, to improve decision support objectives, internal business processes, resource application, and customer value. Activity-based costing (ABC), as a management accounting tool can offer a solution for accurate costing and improvement in efficiency, effectiveness, and quality of the cost management in Cooperative banks.

3.3.4 The Government Servants Co-Operative Credit Society Ltd., Vadodara

The Government Servants Co-operative Credit Society Ltd., Vadodara is reputed co-operative Society in the state of Gujarat. With the guidance and blessings of Maharaja Sir Sayajirao, late Shri Purshottamdas Nathalal Desai with 13 lecturers founded the Baroda Government Servants Urban Co-operative Credit Society Ltd., on 17th December, 1910. The society that was started with 33 members has today more than 9011 members. The very basic reason of emergence of the co- operative financial institutions was to free common man from the clutches of money lenders. Therefore, to develop and nourish habit and thrift for savings among the members of the society, society has floated various savings schemes at different point of times.

All throughout society has observed strict financial discipline. Flow of deposits and promotion of various savings schemes. It has achieved sound financial base and liquidity. Society is ISO 9001-2008 certified with 0% NPA holding Credit Society. It is having paid up share capital of Rs. 22,21,520, Reserves and other Funds Rs.10,10,69,844.58, deposits Rs. 59,37,63,579.33 and Loans and Advances of Rs. 67,26,61,304.31. Due to strict financial discipline and transparency Society could achieve a net profit of Crore plus and the net profit of the society for the Financial year 2014-15 now stands at Rs. 1,45,40,783.89 .

3.3.5 Methodology

The methodology adopted in this study conducted at The Government Servants Co-operative Credit Society Ltd., Vadodara (GSCCSL)is an analytic-descriptive approach where observation and review of financial documents were the key techniques. Study of the cost price of services has been carried out considering ABC technique by procuring the financial information for the year 2014-2015.

The data collection of the study was carried out during February to September of 2015. Ensuring a high un-biased and consistent conduct of this study, multiple data collection methods like interviews, observations, and documentary analysis were used. In order to provide independent views for the study, bank professionals were interviewed for the existing practices of cost ascertainment and calculation and also

for developing the Activity Based Costing System (Refer Appendix 2). The collected data was further analyzed to construct ABC Model.

The ABC model is composed of both the cost assignment view and the process view with activities as the intersection of these two views. The cost assignment view provides information about resources, activities, and cost objects. The process view provides financial and non-financial information about cost drivers and performance measures for each activity or process.

3.3.6 Developing Activity Based Costing Model

The bank's existing cost system was traditional. The bank under study measured product revenues using fee income and net interest. But estimated costs of producing these revenues were not identified. The management became interested in activity based costing as promising methodology for assigning the bank's operating expenses to varied products. The bank's activity based costing system is designed with three questions: "How should it define resource pools? What activities should it define? Should it analyze costs by product or by customer?" These questions seem very logical in helping in developing the activity based costing. Inorder to develop ABC model for The Government Servants Co-operative Credit Society Ltd., the following steps suggested by Drury (2000) were taken into consideration:

1. Identifying the major activities that take place in an organization;
2. Assigning costs to cost pools/cost centres for each activity;
3. Determining the cost driver for each major activity;
4. Assigning the cost of activities to cost objects.

The first stage comprises of the first two steps and the second stage of the latter two in the two-stage allocation process.

3.3.6.1 Resource cost pool, Cost Objects and Activities Identification

This step is fundamental as it determines the structure and the scope of the system. It is also beneficial in the sense that it compels the accountants to determine what is actually happing in relevant areas of the business and hence ensure the costing system is built on reality (Innes et al. 1994 and Blocher et al. 1999).

3.3.6.1.1 Resource cost pool

After scanning the general ledger and identified more than thirty resource cost pools, the resources are grouped into three homogenous cost pools, which include the Human Resource Cost, Fees, and the operating costs. Human Resource Cost (Personnel cost) includes salaries and Allowances. The cost labour, both direct and indirect, is allocated to the activities, using information from the general ledger, payroll registrations, and the personnel tables of occupation. Fees include Certified Auditor Fees, Chartered Accountant's Audit Fees, Legal Expenses, Tax Audit Fees, Sitting Fees, Honorarium, General Meeting, Annual Report and Election expenses. Operating Costs includes telecommunications, store and equipment rent, warehousing rent and insurance fees, repairs-maintenance, third party fees, carriage expenses, advertising expenses, subscriptions, contributions and donations, stationery expenses, consumables, unit equipment miscellaneous expenses, and fixed asset depreciation.

3.3.6.1.2 Defining Cost Objects

The identification of Cost Objects is a difficult process. Such cost objects were recognized in the cooperative that cover almost all the functions and distinct features of the cooperative. Involved entities were thus identified along with the acquired experience and knowledge that would contribute in development of cost model for the bank product and services. After detailed interview with the bank authorities two main Cost Objects comprising the basis of the proposed model: Loan and Advances and Investment. The correlation and interaction of the above objects, activities, entities, driver costs and resources are the basis for the completion of every costing model planning. The management of the cooperative bank was primarily interested only in knowing the profitability of Loans granted to various members and Investments made in the different forms in the first phase of activity based costing design. This information was required by the management for decision making. On the basis of this above cost objects were fixed upon for further analysis.

3.3.6.1.3 Defining Activities

Activity means a task performed with specific objective and in ABC the onus is on activities which are the building blocks for constructing ABC system. Once the resource cost pools were specified, more than five weeks spent out in operational

areas for identifying activities and mapping them. By using knowledge and supported interviews to identify more than twenty tasks or activities under taken in the bank. For example 'instigation of file for loan' for this the activities could be receiving the application, interviewing the applicant, understanding the credit history, evaluating the applicant, taking decision, disbursing the loan amount. The process of identifying activities begins with breaking bank activities into three categories: file creation, processing and maintenance related, accounting work related activities and recovery or collection related activity.

3.3.6.2 Assigning Costs to Cost Pools

After identifying and describing cost pools, the next task was to determine the costs associated with cost pools general ledger proved to be a good source of information about the cost of resources used to perform activities; most general ledger systems report the costs of different resources. The statement given below indicates various activities and cost associated with those activities:

Table 3.18

Statement of Activity Cost Pool and Total Cost

Cost Pool	Amount Rs.
1. Human Resources Cost	
Salary Remuneration Dearness Allowance and other Allowances	27,01,523
Total	**27,01,523**
2. Fess	
Certified Audit Fees	28,281
Chartered Accountant Audit Fees	1,44,337
Legal Expenses	1,47,500
Seating Fees	36,400
Honorarium	1,000
General Meetings, Annual Reports and Election Charges	1,44,921
Total	**4,99,439**
3. Operating Cost	
Contingency, Printings and Post	1,71,366
Taxes and Electricity	2,60,818
Advertisements and Miscellaneous	3,09,526
Insurance Premium	4,710
Telephone Charges	44,743
Travelling Expenses	10,618
Total	**8,01,781**
Total	**40,02,743**

The above table reveals that major part of Bank Cost is the cost of Human Resources.

3.3.6.3 Selecting Appropriate Cost Drivers for Assigning the Cost of Activities to Cost Objects:

After identifying and describing cost pools and cost associated with cost pools, the next task was to determine first-stage cost drivers (resource cost drivers). Cost drivers mean the factors which drive the cost and which influence the cost of an activity, as performance of activity consumes resources of the organisation. So, resources consumed by each activity were identified. Bank cost is further divided into two parts: Direct Cost and Indirect Cost.

Direct cost accounts, such as Interest on borrowed funds, fee costs and other specific costs, are directly assigned to the corresponding Cost Object. Using existing costing practices, interest expense can be effectively assigned to the bank's products based on the value of Loan and Investments. Indirect cost accounts are grouped in the cost pools according to similarities in cost allocation principles. The major groups are Human Resource Related Cost (Personnel cost) (benefits, remuneration, rewards, taxes, trips, training etc),Fees (Legal, audit fees etc,)Operating Costs (office, and phone, post, bought services).

After detailed analysis of records and interviews with the management, resource cost drivers (first stage cost drivers) are selected for various cost pools. Assignment of Human Resource Cost (Personnel cost) are based on interviews with Manager and on the basis of nature of duty performed. To trace staff costs to activities, all employees of the bank from senior management to the clerical and support staff filled out time sheets (Refer Annexure 4) identifying the time they spent on various activities. The human resource cost was then assigned to each activity in proportion to the time spent. Fees costs were assigned to file creating and maintaining activity, accounting activity and collection activity on the basis of total amount of loan and investments and amount recovered. Operating Costs related monthly reports are used which specify the nature of the expenses and their connection with activities in the proportion of numbers of files, accounting entries and recovery transactions. Any Specific costs are allocated case-by-case depending on the nature of the cost. By aggregating all of the resource pool costs assigned to each activity, and derived the total costs of each activity as shown in table number 3.19.

Table 3.19

Statement of Cost by Resource and Activity

Resource Cost Pools	Total Resource Cost (In Rs.)	Driver	Activities		
			File creation related (In Rs.)	Accounting work related (In Rs.)	Recovery related (In Rs.)
Human Resource costs	27,01,523	Time allotted	1029152	771864	900507
Fees	4,99,439	Amount of loans, investments and recovery	160058	249720	89661
Operating costs	8,01,781	No. of files, entries and recovery transaction	17931	591278	192572
Total Activity Costs	**4002743**		**1207141**	**1612862**	**1182740**

The above table identifies cost of principal activities related to the bank. With the resource pools specified and activities selected and defined, resources costs are matched with activities using resource cost drivers i.e. first stage driver. For example, Human resource cost assigned on the basis of time allotted to perform various activities fees related costs are assigned on the basis of amount of loans, investments and recovery and operating costs assigned on the basis of numbers of files, entries and recovery transactions.

3.3.6.4 Assigning the Cost of Activities to Cost Objects

After identifying activities and its cost it is necessary to charge or assign these costs to various cost objects for which activities are performed. The next step traced the costs of each activity to the different cost objects. Thus, the final step involves applying the cost driver rates to cost objects such as products, services, and customers. Therefore, the cost driver must be measurable in a way that enables it to be identified with individual cost object. The ease and cost of obtaining data on cost driver consumption by cost objects is therefore a factor that must be considered during the third step when an appropriate cost driver is being selected. The tracing was accomplished by defining activity cost drivers (i.e. second stage cost driver) for each activity (see the first two

columns in table number 3.20). The activity cost driver represented the event that triggered the performance of each activity, such as no. of files i.e. loan accounts and investment accounts, no. of accounting entries and no. of recovery transactions. These data came from various sources of the bank's information system. Activity cost driver rates (see the last columns in table number 3.20) were calculated by dividing the cost of each activity by the quantity of the associated activity cost driver. The activity cost driver rate could now be used to trace activity costs to individual cost object.

Table3.20

Statement of Activity Cost Driver Quantities and Rates

Activity	**Activity Cost Driver**	**Total Activity cost (In Rs.)**	**Quantity of Activity Cost Driver**	**Activity Cost Driver Rate (In Rs.)**
File creation related	Numbers of Loans and Investments Account	12,07,141	7,696	156.853
Accounting work related	Numbers of accounting entries	16,12,862	2,53,776	6.355
Recovery related	Numbers of recovery transactions	11,82,740	82,652	14.310
Total Activity Costs		**40,02,743**		

The above table shows activity cost, activity cost driver and cost driver rates calculated to assign activity costs to various selected cost objects.

After calculating activity cost driver rates, next step is to assign activity cost to various cost objects. After detailed interview with the bank authorities two main Cost Objects identified as Loan and Advances and Investments. Product costs were calculated by determining the quantity of each activity cost driver used by each of the cost objects, multiplying these quantities by the associated activity cost driver rate, and summing across all the activities used by individual products.

Table 3.21

Statement of Activity Cost used by Cost Objects

Activity	Total Amount Rs.	Activity Cost Driver	Products (Cost Objects)	
			Loan & Advances (InRs.)	Investments (InRs.)
File creation related	12,07,141	Numbers of Loans and Investments Accounts	1054993	152148
Accounting work related	16,12,862	Numbers of accounting entries	15,38,885	73,977
Recovery related	11,82,740	Numbers of recovery transactions	11,54,979	27,761
Total Indirect Costs	**40,02,743**		37,48,857	2,53,886

The above statement summarizes the assignment of activity costs, including file creation and maintenance, accounting and recovery related costs to Loans and Investments. It indicates total costs and activity costs used by individual products.

Table 3.22

Statement of Cost under Activity Based Costing for the Year 2014-2015

(Amount Rs.)

Particulars	Total Amount Rs.	Products (Cost Objects)	
		Loan & Advances	Investments
Direct Cost : Interest paid on Deposits and Schemes [Amount of Loan & Investments (87.54% & 12.46%)]	5,40,49,964	4,73,15,338	67,34,626
Add : Total Indirect Costs	**40,02,743**	37,48,857	2,53,886
Total Cost	**5,80,52,707**	**51064195**	**6988512**
Income Received on Loan and Investments	**8,30,43,841**	**6,98,69,691**	**1,31,74,150**
Add: Profit (Income less Cost)	2,49,91,134	1,88,05,496	61,85,638
% of Total Costs		87.96	12.04
% of Net Profits	30	26.92	46.95

The Direct Cost is assigned on the basis of amount of Loan and Investments. In case of Indirect cost, cost pools and cost drivers are identified and assigned to cost objects. The product profitability was calculated by subtracting the total cost of all activities under taken to support a particular product from the net interest revenue earned from each product.

It was observed from analysis that total costs of Loan and Advances (88%) are higher than Investments (12%). It means that operating costs of Loans and Advances were very high and for Investments operating costs were found to be low.

From the view point of Profitability it was observed that total profits of Loan and Advances (27%) are lower than Investments (48%). It means that profitability of Loans and Advances were medium and for Investments profitability were found to be high.

From Liquidity view point it was observed that liquidity in Investments was very high due to investments in Fixed Deposits and Government Securities whereas liquidity in Loans and Advances were found to be medium or low.

From the view point of Risk it was observed that investments in Fixed Deposits and Government Securities bear no risk or zero NPA whereas for Loans and Advances there may be risk but bank is having zero NPA so, there is no risk in Loans and Advances.

3.3.7. Activity Based Costing Model

The task of creating a cause-and-effect network of cost assignments from their incurrence by a bank to the bank's cost objects begins by first separating the bank's costs into two categories: Direct Cost (interest expense) and Indirect Cost (bank activity costs). Using existing costing practices, interest expense can be effectively assigned to the bank's products based on the amount of funds acquired. Bank activity costs, on the other hand, will need to be addressed using activity-based concepts as shown in the figure:

Figure 3.1 **Cost Allocation Model for Bank under Activity Based Costing System**

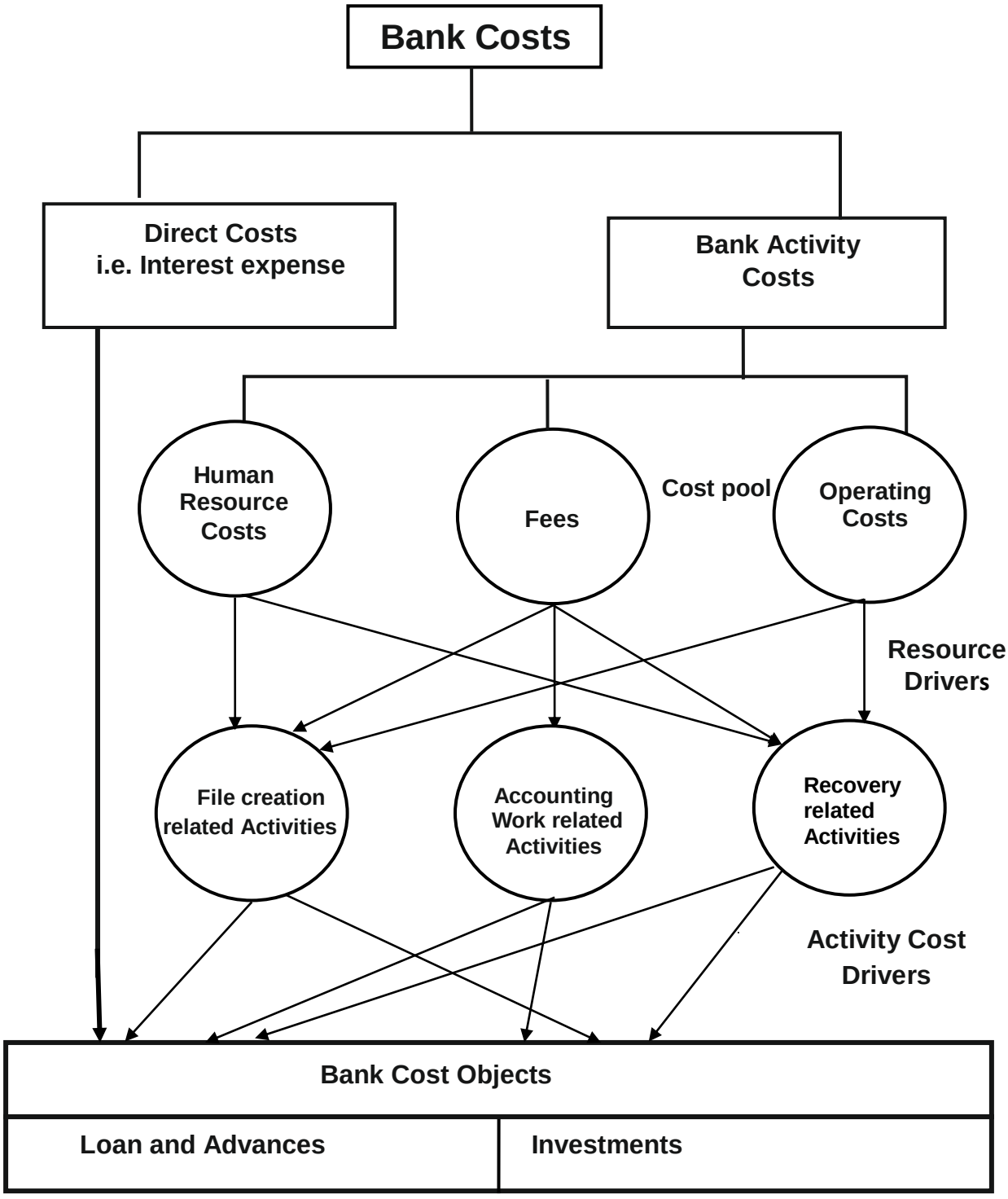

Figure 3.1 shows this first step in the assignment of bank costs to bank cost objectives. As can be seen in the figure, interest costs are assigned directly to the bank's cost objects while bank activity costs are isolated for further analysis. Bank costs are further grouped to cost pool on the basis of similarities. By using first stage

cost drivers cost are associated with identified activities and from activities to cost objects using second stage cost drivers.

3.3.8. Findings and Conclusions

The Co-operative Bank under study is reporting on the basis of general purpose Financial Statement. The present accounting system followed by the bank does not provide detail about cost and profit individually for the services provided or income earning products/actions (output) by the bank i.e. Loans and Investments. In order to assign resource costs to cost objects via main activities under taken by the bank, on the basis of cause and effect relationship, new tool became essential. As it is revealed in the literature review that the cooperative banks are facing multifold challenges due to heavy competition created in the financial market with entry of other banks (other cooperatives and private sector banks). The growing challenges in the field of banking sector as an outcome of the fierce competition, demands accuracy in product wise cost calculation, ascertaining profit as well as profitability. This compels them to invent more efficient ways of doing business by managing cost effectively. The present situation of competitive conditions in the banking sector fostered the development of accounting system to support management functions like planning and control as it is the high time for Cooperative banks to improve its bottom line through internal accruals without relying on frequent bouts of capital infusion by the government. Therefore, the main objective of this case study is to check the efficiency of Activity Based Costing as a tool of cost management system. Following are the important outcome of the undertaken case study of The Government Servant Cooperative Society.

i. The state of Cooperative bank in this case study was no different, review of pricing policies on deposits and loans, appraisal systems, recovery procedures, major expenditure items was necessary. And a suitable action plan to plug leakages and augment income needed to be devised. The present state of condition of the cooperative made it imperative to look for a good cost accounting system for detailed cost information to sustain with profitability in the growing market.

ii. Detail observations, survey and personal interviews led to identification of two events as output i.e. cost objects first loans and advances another one investments.

iii. On detail observation and study of expenses incurred by the society all the resource cost are identified and collected in to three main resource cost pools namely Human resource costs, fees and operating costs.

iv. At Government servant cooperative society all the activities are studied in detail and merged in three main identified activities namely

1. File creation related activities
2. Accounting work related activities and
3. Recovery related activities.

v. To assign resource cost to activity by establishing cause and effect relationship following resource costs drivers are identified :

Human resource cost as nature of duty performed

Fees costs were assigned on the basis of total amount of loan and investments and amount recovered.

Operating Costs related monthly reports are used which specify the nature of the expenses and their connection with activities in the proportion of numbers of files, accounting entries and recovery transactions.

vi. After first stage assignment of resource cost to identified activities, respective activity cost is calculated which is as under :

Table 3.23

Statement of Total Activity Cost

Particulars	**Total Resource Cost (In Rs.)**	**Activities**		
		File creation related (In Rs.)	**Accounting work related (In Rs.)**	**Recovery related (In Rs.)**
Total Activity Costs	**4002743**	**1207141**	**1612862**	**1182740**

vii. After calculating activity costs for respective activities, these activity costs are assigned to identify outputs. For this purpose, on the basis of observation and establishing cause and effect relationship between activities and output, activity cost drivers are identified as under :

Table 3.24

Statement of Activity and Activity Cost Driver

Activity	File creation related	Accounting work related	Recovery related
Activity Cost Driver	Numbers of Loans and Investments Account	Numbers of accounting entries	Numbers of recovery transactions

viii. The costs of each activity to the different cost objects traced on the basis of activity consumed, activity cost driver rates are calculated as under:

Table 3.25

Statement of Activity Cost Driver Quantities and Rates

Activity	**Activity Cost Driver**	**Quantity of Activity Cost Driver**	**Activity Cost Driver Rate (InRs.)**
File creation related	Numbers of Loans and Investments Account	7,696	156.853
Accounting work related	Numbers of accounting entries	2,53,776	6.355
Recovery related	Numbers of recovery transactions	82,652	14.310

ix. After calculating activity cost driver rates, cost of each cost objects are calculated on the basis of activities consumed and by applying cost driver rate.

Table 3.26

Statement of Cost Objects costs

Activity	**Total Amount Rs.**	**Products (Cost Objects)**	
		Loan & Advances (In Rs.)	**Investments (In Rs.)**
File creation related	12,07,141	1054993	152148
Accounting work related	16,12,862	15,38,885	73,977
Recovery related	11,82,740	11,54,979	27,761
Total Indirect Costs	**40,02,743**	37,48,857	2,53,886

x. With the help of activity based costing following important outcomes were found as shown in table number 3.27 :

Table 3.27

Statement of Cost, income and profit as percentage of Total amount of Loan and Investments

Particulars	**Total Amount Rs.**	**Products (Cost Objects)**	
		Loan & Advances	**Investments**
Amount of Loan & Advances and Investments (in Rs.)	76,97,21,800	67,26,61,304	9,70,60,496
Total Cost (in Rs.)	5,80,52,707	51064195	6988512
Total Cost (as percent of Loans & Advances and Investment)	7.54	7.59	7.20
Income Received on Loan and Investments (in Rs.)	8,30,43,841	6,98,69,691	1,31,74,150
Interest received (as percent of Loans & Advances and Investment)	10.79	10.39	13.57
% of Net Profits	3.25	2.8	6.37

From the view point of cost, total cost of loans and advances is 7.59% which is higher than the total cost of investments which is 7.20% so, investment is less costly as compared to loans and advances.

From the view point of income, Interest received on loans and advances is 10.39% whereas from investments it is 13.57% so, investment is providing more interest as compared to loans and advances.

From the view of net profit investments is fetching higher rate of net return as net profit generated from loans and advances is 2.8% and from investments is 6.37 %.

It is also clear that profit earned by bank on loans and advances is lower which is about 40% of the profitability calculated on investments. So, increasing profits on loans and advances can increase performance of bank. As larger proportion of loans and advances can help bank to increase an overall profit by remarkable amount if there is nominal decrease in percentage of interest on loan. Increase in investments can increase overall profit of the bank at a higher rate due to leverage effect.

xi. It was found that total costs of Loans and Advances (88%) are higher than Investments (12%). It means that operating costs of Loans and Advances

were very high and for Investments operating costs were found to be medium.

xii. Findings from the Profitability point of view were observed that total profits from Loans and Advances (27%) are lower than Investments (48%). It means that profitability of Loans and Advances were medium and for Investments profitability were found to be high.

xix. On the basis of above discussion, following are the observations and suggestions :

a. On the basis of the profitability of cost objects, operating cost of loan and advances are required to be reduced by managing the activity performed at bank. It was also found that bank has taken no steps to reduce transaction cost which means that cooperative bank has not resorted to adopt technological means like ATM service, e-banking, mobile banking etc.

   Considering large proportion of fixed operating costs, transaction cost can also be reduced by increasing numbers of accounts as well as transactions.

   The reduction in transaction costs will help to improve overall profits as well as profitability of loans and advances having more than 95% of transactions in overall transactions.

b. It is recommended that Bank should adopt latest technological means to reduce transaction cost, this can be adopted by providing e-suvidha like ATM, passbook printing and deposit machine in nearby Government offices on the same line as multinational, nationalized and some of the cooperative banks. This type of facility may reduce transaction cost to the bank and may increase customer satisfaction and profitability. This will also help to increase in number of accounts and in turn increases the profitability.

The findings and their analysis asserted that it is possible to implement ABC in the cooperative bank although there might arise difficulties to manage calculations as the system information is overly detailed. The Costing system designed and suggested to Co-operative Bank provides cost data for selected cost objects based on the

methodology of Activity-Based Costing. This output can be used for managerial decision making. As ABC is easy and fast to implement, inexpensive, fast to update and it captures the complexities of banking organization. Activity-based costing (ABC), as a management accounting tool, offers a remedy for accurate costing as well as improvement in Cooperative bank under study.

The findings of the two case studies have laid down the foundation for the introduction of Activity-Based Costing system and have substantiated the fulfillment of the objectives that form the framework of the research. Major findings common to both the case studies are: Accurate measurement of cost of activity and cost objects helps to make various managerial decisions. The decision making process is improved with the elimination of the factor of cost cross subsidization and long term sustainability of the organization gets accentuated as space is provided for accurate competitive pricing.

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