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ACTIVITY-BASED COSTING OF LIBRARY SERVICES IN UNIVERSITIES – A CASE STUDY OF A PRIVATE UNIVERSITY

Abstract:

An organization's costing system is a system that helps the management with the strategy planning while the system plays an important role in providing accurate cost information about the products and customers. In other words, the costing management system is important to provide timely and quality information to help managers in their decision making process. Producing quality graduates is the main objective of any university and the cost of quality or the cost of poor quality is one that is often difficult to measure in higher education. This can be partly attributed to the fact that most accounting systems are not structured to capture important cost-of-quality information.

In order to succeed, many organizations tend to shift from conventional or traditional costing system to Activity-Based Costing (ABC). ABC provides both higher education administrators and policymakers with better information on which to base decisions. The approach provides information to universities that could help them in better projections and forecasting. Not only that, this approach provides information on different activities and identifies the high cost areas and high impact activities that can help administrators in decision making process. The use of multiple cost pools and drivers under ABC leads to more detailed and accurate product costing than that provided by traditional cost systems. The individual activities become the central cost focus with the assigning of costs to activities based on the way in which the resources are consumed by the activities. Managers can then determine whether certain activities are necessary or whether they can be eliminated. Only services that are value adding are maintained while nonvalue-adding services can be eliminated, resulting in cost savings for the university

Although not trained as accountants, library managers rely on accounting information for strategic planning and operational decision-making. Increased demands for institutional accountability, with university performance and costs under increased scrutiny, place library managers under increased pressure to maintain quality services while faced with decreased funding and tighter budgets. A commitment to greater efficiency requires an understanding of cost behavior. Considering that there is no evidence of the costing systems in universities in the Kingdom of Bahrain, this paper attempts to investigate the possibilities and limitations of implementing ABC in the Royal University for Women. More specifically the paper discusses the benefits of ABC to library managers and explains the steps involved in implementing ABC in an academic library.

Keywords:

costing systems, activity-based costing, cost drivers, costing of library services, universities

INTRODUCTION

Activity-based costing (ABC) has been widely identified as a sophisticated cost management technique that is used to manage and reduce cost as well as improving organizational performance. ABC is explained by a large number of authors (Ahmed, 2012; Kongchan, 2013) as a strategic tool that ensures accurate product costs as compared to traditional costing system. ABC implementation also offers useful information for performance measurement, cost control and strategic decision-making. Notably, the upsurge of researchers' and practitioners' attentions towards the implementation of ABC in organizations was as a result of ABC superiority over traditional costing methods and subsequently its significance in enhancing organizational performance (Fei and Isa, 2010; Fatma and Habib, 2014). As such, many organizations from different industries, including universities have focused their attentions towards the implementation of ABC due to the ability of ABC to provide accurate costing information and enhance organizational performance.

Chea (2011) defined ABC system as a tool of managing quality of costs and of measuring and evaluating the performance of the processes, products, and resources. Moreover, Narong (2009) pointed out that the traditional costing system is not an appropriate system for the decision-making process even though it works from a reporting perspective, because it distorts the allocation of overhead costs, resulting in an ineffective structure for evaluating expenditures suggesting that only an ABC system can correct and improve these deficiencies in order to reach more truthful costs. Therefore, the ABC system is one of the systems that will support decision makers by displaying the real patterns and behaviors of costs and resources.

Universities share many similarities to modern manufacturing organisations as they are large organisations producing a complex mix of outputs or products. Ellis-Newman (2003) suggests that, subject to appropriate changes to accounting and non-financial information systems, there is no intrinsic reason why ABC could not be adopted in the university environment. Information about the costs of activities will aid universities in identifying opportunities for cost improvement while comparisons of generic support services across different universities may enable the identification of more efficient ways of performing services (i.e. benchmarks of best practice).

According to Ellis-Newman (2003), escalating costs, diminishing resources, increased competition from other universities, and demands from legislators and the public for greater service and accountability are forcing university administrators to consider more effective management of resources and costs than has traditionally been the case. Libraries today are included in the general demand for cost transparency and effective cost management. With the data they have traditionally collected, libraries can assess details about the costs of collection building; what they need now are reliable data about the costs of their services and products (Onat et al., 2014). Kont (2012) argues that ABC

is ideally suited for use in academic libraries. Many activities are discrete and the major expenditure, salaries, can be easily traced according to the amount of time each staff member spends on each activity. Although it may be initially a time consuming task to set up an ABC system, the computerisation of many library services means that much of the information required by the system can be gathered automatically once the system has been implemented.

Accordingly, the objectives of this study include the following:

- investigate the possibilities and limitations of implementing ABC in universities.
- illustrate the implementation of activity-based costing of library services in a private university.

ACTIVITY-BASED COSTING (ABC)

The ABC method was designed in the USA during the 1980s (Cooper and Kaplan, 1988). It was originally used in the manufacturing sector in response to dissatisfaction with traditional management accounting techniques that rely on volume-based methods for allocating overheads to product. Activity-based costing is a logical approach to the management of the organization, which helps to learn to assess the organization's processes and to identify their cost (Kuchta and Troska, 2007).

The traditional costing system (also known as the functional costing system) is a unit-based system where it assumes all costs to be classified as fixed or variable regardless of changes in the units or volume of production (Hansen and Mowen, 2000). ABC, on the other hand, is a two-stage procedure used to assign overhead costs to products or services (Hilton, 2001). In the first stage, significant activities are identified, and overhead costs are assigned to activity cost pools in accordance with the way resources are consumed by the activities. In the second stage, the overhead costs are allocated from each activity cost pool to each product line in proportion to the amount of the cost driver consumed by the product line. ABC differs from traditional cost accounting, such that overhead costs are traced to products or services using cost pools and activity cost drivers rather than volume based overhead absorption rates. Basically, ABC assumes that products consume activities and activities consume overhead resources (Clarke and Mullin, 2001). Implementation of management accounting system such as ABC has the potential to provide managers with accurate information for setting realistic performance target, performance evaluation standards and receive feedback from its activities, which will in turn result in improved organizational performance.

The idea behind activity-based costing is simple and logical – costs and expenses do not arise automatically, charges and expenses incur as a result of management activities. There is no holding cost inside the organization, there are only activities carried out for

customer service which in turn lead to charges. Cooper and Kaplan (1988) argue that ABC provides a more accurate product cost than traditional cost methods because activities, not production volume, cause costs to be incurred. Activity-based cost systems collect costs to functional cost pools and then allocate these costs to products on the basis of activity – cost drivers. The generators of costs are called cost drivers and cost behaviour is caused by variations in activity volume. An activity is defined as an event or task undertaken for a specific purpose. Cost drivers are the events that cause changes in the behaviour of costs in the activity cost pool. Once key activities have been identified, they are analyzed to determine the event (cost driver) that causes the costs in the cost pool to be incurred (Onat et al., 2014).

Activity cost pools are the accumulation of all overhead costs involved in the processing of each activity cost driver. The cost pool may be a very general accumulation, such as aggregating all costs involved in user services into one cost pool, or it may be more detailed so that each separate activity carried out in user services has its own cost pool. Aggregating all user services costs into one cost pool will greatly reduce the accuracy of the measured service costs, as the majority of activities in user services are driven by different cost drivers (Kont, 2012).

The key concepts of the ABC system are (Ellis-Newman, 2003; Onat, 2014):

- Resources – an economic element that is required in the performance of activities.
- Cost – the monetary value of resources used or sacrificed or liabilities incurred to achieve an objective, such as to acquire or produce a good or to perform an activity or service.
- Cost driver – factors that cause changes in the cost of an activity.
- Resource cost driver – an indicator, which helps to associate the costs of resources to corresponding activities and to distribute the costs of different resources between activities.
- Activity – what we do in an organization.
- Activity cost driver – a measure of the consumption of an activity by products, customers or services. Used as a basis of assigning activities to cost objects.
- Cost object – an activity, output, or item whose cost is to be measured. In a broad sense, a cost object can be an organizational division, a function, task, product, service, or a customer.

In traditional costing methods (especially in full costing), one of the most important factors is allocating overhead costs. Misallocations may cause relatively incorrect costing and pricing. The fundamental assumption of ABC is that cost objects (goods or services) are results of activities that consume resources therefore; activities direct cost management process. In the ABC process, units going through more activities get more overhead costs. Consequently, misallocations are avoided. Another important factor of ABC is

allocating costs via activity drivers that provide the most suitable cost allocation to product/service characteristics because drivers dissimilar to production characteristics may cause miscalculations.

ACTIVITY-BASED COSTING IN UNIVERSITIES

According to El-Gammal et al. (2016), most of the service sector such as telecommunications, insurance, banking, education, and auditing firms are still using the traditional accounting system which allocates the company's overhead costs to the performed services based on a single cost driver, which is in most cases the direct labor. This type of allocation, results in misrepresentation of costs which in today's competitive market decreases market share and available funding resources. ABC system is also seen to be flexible with specific characteristics and enable the management to develop a cost accounting system (Manuel, 2011), able to focus on a specific faculty (Ismail, 2010) and support services (Krishnan 2006) in higher education institutions.

Universities need to understand that the accounting information they generate is a measurement tool for their performance, profitability, and accounting is no more only recording financial transactions for organizations (Hardan & Shantawi, 2013). The ABC system can be this tool for cost allocation resulting in a more accurate, relevant and rational managerial decision making contrary to traditional costing- while ensuring both efficiency and quality of output. In turn, this would lead to more realistic financial information and would minimize the chance of misguided decision making (Kaplan, 2006). According to Lotfi and Mansourabad (2012), competition is the most triggering factor and the main influence to implement the ABC system. Moreover, ABC identifies the actionable cost savings from process improvement and advances the benefits from better utilization of capacity (Kaplan, 2013).

Several universities use activity-based costing or apply its modifications, such as transparency approach to costing (TRAC), full economic costing (FEC) or full costing, as accounting technology (McChlery, McKendrick, & Rolfe, 2007; Dražić-Lutilsky & Dragija, 2012). According to Lutilsky and Dragija (2012), as costs of higher education are constantly increasing, which is followed by growing demands on universities - both in education and research, it is very important to track and control costs in an appropriate way. The first step in responding to these claims is to identify the real costs of university activities, which requires the implementation of the full costing method. The full costing method usually stands for the ability to identify, calculate and allocate all direct and indirect costs of all the university's activities, including projects. In this context, the ABC method should not be necessary.

Tatikonda & Tatikonda (2001) have discussed the implementation of ABC in higher education institutions and concluded that implementation of the ABC system can help

universities achieve tighter financial management and better resource allocation. The authors have concluded that the ABC system may provide benefits to academic institutions, such as: better cost information, better identification of resource needs, better distribution of scarce resources, better course and program mix, better cost control and better public relations tool.

The rationale for using ABC in a library is the same as for other organizations; to allocate indirect costs to products and services based on the factors that most influence them (Ellis-Newman, 2003). Goddard & Ooi (1998) discussed the ABC methodology, as implemented in library services at the University of Southampton. The result showed substantial differences in the allocation of the central overheads cost as between institutions of HE using the ABC model. These authors argue that, although the ABC approach may overcome some of the problems of overhead allocation and improve the economic efficiency of organizations, there are significant problems with its practical application. In this study, it has been concluded that the ABC model provides more equitable overhead allocation than traditional systems, as it ensures that the faculty is charged for its actual consumption of central resources.

In summary, traditional accounting systems in universities focus on the budget, which is designed primarily as a means of demonstrating to external agencies how ‘efficiently’ the institution manages its resources. Decisions are often based on how new activities will affect faculty or staff workloads with little consideration given to the actual cost of providing services. If costs are considered, it is often only the incremental or short-term costs, with little consideration given to long-term indirect costs which may be considerable (Ng and Ritter, 2016). Activity-based costing is a much more useful management tool for university managers as it provides information about the costs of providing services and what causes those costs to be incurred (Estermann & Claeys-Kulik, 2013). Activity-based costing provides managers with information that enables them to make informed decisions concerning the optimal allocation of resources so that activities that are nonvalue-adding can be discontinued and resources shifted to activities that provide the most value to the university.

BENEFITS AND LIMITATIONS IN IMPLEMENTING ACTIVITY-BASED COSTING IN THE LIBRARY

Activity-based costing has many benefits for managerial decision-making, ranging from decisions concerning the overall direction of the library to matters of operational efficiency (Ellis-Newman, 2003). One of the main benefits of ABC is that it provides for a more accurate costing of library activities. Activity-based costing provides managers with an understanding of what drives library costs, making them more visible for cost-benefit analyses. As managers gain awareness of the true costs of providing services, they can

make choices that better utilize limited resources (Onat et al., 2014). Activities that are not value-adding can be eliminated so that resources are channeled to activities that are the most beneficial to the organization and increase efficiency, particularly where quality considerations need to be made (Ng and Ritter, 2016). Activity-based costing can be applied to improving the quality of services provided by the library by ensuring appropriate allocation of resources to the most important areas.

According to El-Gammal et al. (2016), the main reasons for not applying the ABC system in the service industry in the Arab World include the lack of commitment of the parties involved including the necessity to change internal culture and the availability of financial and time resources. On the other hand, universities recognize that with traditional costing systems, they are unable to accurately determine a true cost of providing teaching and support services and for the charging out of services. Activity- based costing provides management with a reliable method for determining an appropriate fee. Activity-based costing has many benefits to offer the library and other support areas of the university. However, one of the problems to be overcome if the library does decide to implement an ABC system, is that the current university accounting system does not support the collection of activity-based information (Ellis-Newman, 2003).

An ABC system uses many more cost pools than those provided by university accounts. For example, to implement ABC, the university's current single cost center for library salaries would need to be divided into multiple cost pools to represent the many activities carried out in the library. The setting up of the system will be initially costly (Kamyabi and Devi, 2011). However, once the system is implemented, much of the necessary detail can be captured and analyzed using the university's existing computer system. In the process, the defining of activities and identifying of costs will provide library managers with a much better understanding of how the library uses its resources, which in itself is beneficial.

METHODOLOGY

ABC activity drivers are used to attach costs to activities and they are the event that causes costs to be incurred. Subject to the conditions specified by Noreen (1991), any change in cost driver volume should lead to a subsequent change in total activity cost. This situation can be illustrated by the activity Accessioning. The relevant cost driver is the number of items received by the library. If library acquisitions increase and no slack exists in the resource base, additional staff may need to be employed in order to accession incoming stock. Additional salaries and other costs incurred in the accessioning of material would be added to the Accessioning cost pool. If additional resources are not provided where library accessions increase, the quality of service will be degraded (eg, it will take longer for new material to be accessioned). Correspondingly, a decrease in the number of items accessioned may result in staff being redeployed to

other sections, with a resulting decrease in the activity cost pool. ABC is ideally suited for use in academic libraries. Many activities are discrete and the major expenditure, salaries, can be easily traced according to the amount of time each staff member spends on each activity. Although it may be initially a time consuming task to set up an ABC system, the computerization of many library services means that much of the information required by the system can be gathered automatically once the system has been implemented.

This study uses a case study method. Over the past two decades there has been a call on researchers to study accounting in its practical setting. Therefore, this study illustrate the implementation of activity-based costing of library services in a private university in the Kingdom of Bahrain. The study is based on a four-step approach which include the following (Ellis-Newman, 2003; Kont, 2012):

1) Interviews with library staff;
2) Identification of activities and relevant cost drivers;
3) Analysis of library records and allocation of costs into cost pools, and
4) Calculation of activity costs.

The purpose of this case study is to illustrate the application of Activity Based Costing in universities particularly in costing library services and whether this cost system provides better control over the cost in comparison with the traditional costing system. An appropriate costing system is necessary as the library requires cost information to improve the quality, timeliness, and efficiency of the activities they perform, and to understand accurately the cost of the individual activities.

The research methodology of this case study is a combination of both descriptive and quantitative analyses as follows:

1. Descriptive analysis

- A study of the University Annual Report
- A study of the Library budget and general ledger items

2. Quantitative analysis

- Suggestion of a new model for costing library services

ANALYSIS AND FINDINGS

Under the University's current accounting system, the library is provided with a line-by-line budget that allocates past expenditures to common cost centers according to expenditure type such as salaries, maintenance, professional development, supplies, etc.

Expenditures for user services and central library services are aggregated together with no identification of expenditure by campus, division, or section. There is no attempt to identify costs by activity or to determine what is driving the costs. For example, all expenditures on computer maintenance and software are allocated to common computer maintenance and software cost centers so the library manager has no idea whether the maintenance costs were incurred in cataloging or at the loans desk.

Step 1: Interviews with Library Staff

The first step involved interviewing library staff to identify the main activities performed in the library and the role each staff member performed in carrying out these activities. Staff were asked to describe, in detail, how they performed each task. From staff descriptions, the tasks were documented. Follow up interviews were then conducted with the same staff members to verify the accuracy of the documentation. The need for further interviews depended upon how well the descriptions and documentation matched the actual task being performed.

This step in the ABC system implementation provided an additional benefit in allowing library managers to evaluate the nature of the activities being performed. By analysing each task performed by staff members, questions were asked and answered as to whether an activity was really necessary or if it could be performed more efficiently and effectively.

Step 2: Identification of Activities and Relevant Cost Drivers

Activity centres can be defined by the area for which management wants to separately report costs.

Activities may contain many actions or just one. For example, analysis of the Books Acquisitions section in the library identified five separate activities being performed: ordering, suppliers' invoicing, technical processing, physical processing and follow-up reports. All of them could potentially be aggregated into one activity pool called 'Book Acquisitions'. As we had no means of determining the trade-offs between many and few activity centres and the effect on the accuracy of cost allocations, we used as many centres as there were discrete activities being performed.

Aggregation of the activities (e.g. ordering, suppliers' invoicing and technical processing) would reduce the accuracy of the measured service cost as they are triggered by different cost drivers (receipt of order form, supplier invoice and book acquisition form). Since different costs are involved in performing these activities due to differences in the salaries of staff performing each action and the amount of time each action takes, it was believed that one cost driver would be less accurate in tracing the resources consumed. For the study, activities were determined from the information provided by the interviewees, and flowcharted. The flow charts enabled activities to be mapped from start to completion so that all staff, equipment and other expenditure involved in performing each activity could

be identified. The activities identified in the study and their relevant cost drivers are illustrated in Table 1.

Table 1: Library Cost Pools and Drivers

Library Cost Pools		Cost Drivers
Book Acquisitions	• Ordering	• Number of orders
	• Suppliers' invoicing	• Number of LPOs
	• Technical processing	• Number of acquisitions
	• Physical processing	• Number of acquisitions
	• Follow-up reports	• Number of reports
Journal Acquisitions	• Ordering	• Number of orders
	• Invoicing	• Number of LPOs
	• Maintenance	• Number of acquisitions
Circulation Section	• Book loans and returns	• Number of loans
	• Book return problems	• Number of problems
	• Overdue books	• Number of overdue books
	• Closed reserve – loans	• Number of closed reserve
	• Closed reserve – setup	• Stock numbers
	• Film and video – video replay	• Number of bookings
	• Film and video – internal loans	• Number of loans
	• Shelving	• Items shelved
	• Equipment maintenance	• Equipment use
Reference Section	• Reference Desk enquiries	• Number of enquiries
	• Collection maintenance	• Number of items and usage
	• Special projects	• Number of projects
Research Output	• Cataloguing	• Number of items
	• Classification	• Number of items
	• Physical processing	• Number of items
Users Education Program	• General orientation for students	• Number of students
	• General orientation for staff	• Number of staff
	• Workshops for students	• Number of students
	• Workshops for staff	• Number of staff
	• Other activities	• Number of activities

Step 3: Analysis of Library Records and the Allocation of Costs into Cost Pools

Step three entailed the conversion of the libraries' existing accounting records using activity-based costing techniques to assign costs to the relevant activities. As the largest proportion of operating library budget (excluding the cost of books and journal

acquisitions) is salaries - approximately 81%, the first step was to trace staff costs to the relevant activity cost pool. The percentage of each staff member's salary being allotted to each activity was in accordance with the percentage of their time spent there. In most cases this information was not documented and reliance had to be placed on staff estimates of the time they spent on each activity. With hindsight, greater accuracy could have been achieved by requiring staff to maintain a detailed work record of the time they actually spent on each activity over a suitable sample period (for example, one month). Table 2 illustrates the proportional allocation of staff time to key activities.

Table 2: Percentage of Staff Time Allocated to Activities

Activity Cost Pools	Workload Percentage (Library Manager)	Workload Percentage (Library Technician)	Workload Percentage (Library Assistant)
Book Acquisitions	5%	75%	-
Journal Acquisitions	10%	-	-
Circulation Section	2%	10%	90%
Reference Section	5%	5%	10%
Research Output	8%	-	-
Users Education Program	70%	10%	-
Total	**100%**	**100%**	**100%**

Salary costs were allocated to activity cost pools by multiplying the individual salary costs of user services employees by the proportion of time they spent on each activity. Actual salary costs were used as there were not many employees and their individual salary costs were easily identifiable. In libraries where there are many employees and it is considered too time consuming to separately identify individual salary costs, activity costs can be calculated using the median salary cost of all employees. However, this may result in distorted costs if some activities employ more expensive, higher-level staff than others.

Table 3 provides the activity costs arrived at after multiplying the percentage of time spent on each activity (from Table 2) by the employee's annual salary cost and adding supervision and other costs. The amounts in the activity columns were then added downwards to arrive at total cost per activity area.

Table 3: Library Activity Cost Pools

Activity Cost Pools	Library Manager	Library Technician	Library Assistant	Total Costs
Book Acquisitions	$5,173	$31,005	-	$36,178
Journal Acquisitions	$10,346	-	-	$10,346
Circulation Section	$2,070	$4,134	$38,370	$44,574
Reference Section	$5,173	$2,067	$4,263	$11,503
Research Output	$8,277	-	-	$8,277
Users Education Program	$72,419	$4,134	-	$76,553
Total	**$103,456**	**$41,340**	**$42,633**	**$187,430**

Indirect overheads such as electricity and the depreciation of buildings and equipment are not charged to the library so these were ignored in this study. However, indirect costs, where possible, should be assigned to activities on the basis of their cause-and-effect relationship. Other costs such as stationery, general maintenance and utility costs were allocated according to use and they amounted to a total of $67,213. The libraries' accounting records did not disclose the relevant data and as such staff estimates of stationery, general maintenance and utility were used.

Step 4: Calculation of Activity Costs

Once the total costs for each activity cost pool were established, the next step was to determine a cost per driver. The cost per driver was calculated as the average cost of processing each invoice, order form or other activity event. Cost driver volume was derived from library statistics. The library did not collect the required statistics so it was

necessary to manually count source documents, such as order forms, invoices, etc., to determine volume levels. As manually counting documents is an extremely time consuming task, the development of a recording system to keep a log of the number of transactions for each activity is considered to be one of the most important early steps in the implementation of an ABC system. The results of calculating the cost per driver is provided in Table 4.

Table 4: Activity Cost Driver for Library Activities

Library Cost Pools		Cost Drivers	Total Cost	Driver Volume	Cost Per
Book Acquisitions	• Ordering	• Number of orders	$35,217	836	$42
	• Technical & Physical processing	• Number of acquisitions	$35,217	836	$42
Journal Acquisitions	• Ordering	• Number of orders	$16,651	45	$370
	• Invoicing	• Number of LPOs	$11,656	5	$2,331
	• Maintenance	• Number of acquisitions	$4,995	36	$139
Circulation Section	• Book loans and	• Number of loans	$38,202	1991	$19
	• Overdue books	• Number of overdue books	$5,457	232	$24
	• Closed reserve –	• Stock numbers	$8,186	314	$26
	• Film and video – video replay bookings	• Number of bookings	$2,729	93	$29
Reference Section	• Reference Desk enquiries	• Number of enquiries	$2,301	10	$230
	• Collection	• Number of items and	$9,202	50	$184
Research Output	• Cataloguing, Classification & Physical processing	• Number of items	$8,277	209	$40
Users' Education Programmes	• Workshops for students	• Number of students	$68,898	467	$148
	• Workshops for staff	• Number of staff	$7,655	59	$130
Total Costs			**$254,643**		

With the increasing computerisation of library activities, it should be relatively simple to program the system to record transaction volumes automatically. Additional information can be obtained through faculty aggregated statistics (e.g. the number of loans to students in each faculty, loans to higher degree and undergraduate students, and the volume of materials acquired, processed and catalogued for each faculty). Such

additional data would permit the identification of the main consumers of library services and facilitate more accurate costing of individual study programs.

Discussions and Conclusion

Determining the true cost plays an important role in strategic decision-making. The ABC system provides more accurate cost management and enables the university managers to calculate the 'true' cost of a product i.e. cost per students. Ellis-Newman (2003), in her assessment of the application of ABC within academic libraries, noted that the greatest advantage of ABC to library managers lies in the benefits it provides in the areas of performance measurement and improvement. By focusing management's attention on the costs of key activities, ABC should lead to a better understanding of what drives costs and, by extension, what changes are necessary to reduce costs. Unnecessary activities that do not add value to services can be identified and eliminated. We believe that ABC is feasible in an academic library and that much can be gained from the process of analysing activities. However, more work needs to be done in terms of designing accounting and other information systems to capture cost and activity transaction data in a more routine and disaggregated form for ABC analysis.

This paper discusses the benefits of ABC to library managers and provides an illustration of the type of information an ABC system can provide to assist with decision-making. The information provided in the above tables relates directly to the costs of activities of concern to library managers and is not readily available from the university's traditional accounting system. Although not trained as accountants, library managers rely on accounting information for strategic planning and operational decision-making. Increased demands for institutional accountability, with university performance and costs under increased scrutiny, place library managers under increased pressure to maintain quality services while faced with decreased funding and tighter budgets. A commitment to greater efficiency requires an understanding of cost behavior. The university budget reports provided to library managers are designed for legislative funding requirements rather than for management decision-making and generally mirror the requirements of the institution's funding bodies.

University accounting reports fail to provide adequate information to enable managers to determine the cost of services and to make optimal decisions regarding the allocation of scarce resources. One of the best tools for understanding cost behavior and for refining a cost system is activity-based costing. The rationale behind using ABC in universities is the same as for manufacturing and industry—to allocate indirect costs to goods or services based on the factors that most influence them. The use of multiple cost pools and drivers under ABC leads to more detailed and accurate product costing than that provided by traditional cost systems. The individual activities become the central cost

focus with the assigning of costs to activities based on the way in which the resources are consumed by the activities. Managers can then determine whether certain activities are necessary or whether they can be eliminated. Only services that are value adding are maintained while nonvalue-adding services can be eliminated, resulting in cost savings for the university.

REFERENCES

Ahmed, N. (2012). Implementing the system of costs based on activity in the banking sector an applied study: Rashedbank, atteffhaa branch. *AL-Anbar University Journal of Economic and Administration Sciences, 4(9)*, 326-344.

Chea, A. (2011). Activity-based costing system in the service sector: A strategic approach for enhancing managerial decision making and competitiveness*. International Journal of Business and Management, 6(11)*, 3-10.

Clarke, P. J., and Mullin, T. (2001). Activity-based costing in the non-manufacturing sector in Ireland: A preliminary investigation. *The Irish Journal of Management, 22(2)*, 1-18.

Cooper, R., and Kaplan, R. (1988). Measure costs right: Make the right decisions. *Harvard Business Review, 66(9)*, 96–103.

Dražić-Lutilsky, I., and Dragija, M. (2012). Activity based costing as a means to full costing–possibilities and constraints for European universities. *Journal of Contemporary Management Issues, 17(1)*, 33–57.

El-Gammal, W., Zakka, J., El-Kassar, A., and Dandash, G. (2016). Reasons behind the non-application of the activity based costing system in developing countries, case of Lebanon. *The Journal of Developing Areas, 50(3)*, 417-435.

Ellis-Newman, J. (2003). Activity-based costing in user services of an academic library. Library Trends, 51(3), 333–348.

Estermann, T., and Claeys-Kulik, A. (2013). *Financially sustainable universities. Full costing: progress and practice*. EUA project. Brussels, Belgium: European University Association.

Fatma, A. and Habib, A. (2014). Contextual factors impact on the use of new management accounting practices: An empirical analysis in Tunisian context. *Journal of Research in International Business and Management, 4(3)*, 45-55.

Fei, Z. and Isa, C.R. (2010). Factors influencing activity-based costing success: A research framework. *International Journal of Trade, Economics and Finance, 1(2)*, 144-150.

Goddard, A., Ooi, K. (1998). Activity-based costing and central overhead cost allocation in universities: A case study. *Public Money & Management*, 18(3), 31-38.

Hansen, D., and Mowen, M. (2000). *Cost Management* (Vol. 3rd). Cincinnati: South Western.

Hardan, A., and Shantawi, T. (2013). Impact of applying the ABC on improving the financial performance in telecom companies. *International Journal of Business and Management, 8(12)*, 48-61.

Hilton, R. (2001). *Managerial Accounting: Creating value in a dynamic business environment* (5th ed.). New York: McGraw Hill, Irwin.

Ismail, N. (2010). Activity-based management system implementation in higher education institution: Benefits and challenges. *Campus-Wide Information System*, *27(1)*, 40-52.

Kamyabi, Y. and Devi, S. (2011). An empirical investigation of accounting outsourcing in Iranian SMEs: Transaction cost economics and resource-based views. *International Journal of Business and Management, 6(3)*, 81-94.

Kaplan, R. (2006). The competitive advantage of management accounting. *Journal of Management Accounting Research, 18*, 127-135.

Kaplan, R. (2013). Intelligent Redesign of Health Care. Retrieved from

http://blogs.hbr.org/2013/10/intelligent-redesign-of-health-care/

Kongchan, P. (2013). Factors influencing the implementation of activity-based costing in Thai companies. Doctoral Dissertation, RMIT University.

Kont, K. (2012). New cost accounting models in measuring of library employees' performance. *Library Management*, 33(1/2), 50-65.

Krishnan, A. (2006). An application of activity based costing in higher learning institution: A local case study. *Contemporary Management Research, 2(2)*, 75-90.

Kuchta, D., and Troska, M. (2007). Activity-based costing and customer profitability. *Cost Management, 21(3)*, 18-25.

Lotfi, A. and Mansourabad, M. (2012). The investigation and explaining of activity based costing (ABC). *Journal of Basic and Applied Scientific Research, 2 (3)*, 2860-2864.

Manuel, C. (2011). The applicability of the principles of activity based costing system in a higher education institution. *Economics and Management Research Projects: An International Journal, 1(1)*, 57-65.

McChlery, S., McKendrick, J., and Rolfe, T. (2007). Activity-based management systems in higher education. *Public Money & Management, 27(5)*, 315–322.

Narong, D. (2009). Activity-based costing and management solutions to traditional shortcomings of cost accounting. *Cost Engineering, 51(8)*, 11-18.

Ng, K. and Ritter, D. (2016). Medicaid expansion and activity based costing as a means of measuring efficiency and improvement in healthcare. *Southern Journal of Business and Ethics, 8*, 137-147.

Noreen, E. (1991). Conditions under which activity-based cost systems provide relevant costs. *Journal of Management Accounting Research*, *Fall*, 159-68.

Onat, O., Anitsal, I. and Anitsal, M. (2014). Activity-based costing in services industry: A conceptual framework for entrepreneurs. *Entrepreneurial Executive*, 19, 149-167.

Tatikonda, L., and Tatikonda, R. (2001). Activity-based costing for higher education institutions. *Management Accounting Quarterly, 2(2)*, 19-27.