SECTION 4. Practitioner's corner

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Using activity-based costing to manage private universities in South Africa

Abstract

The measurement of success of any organization requires evaluating various aspects of their operations, such as the quality of their product and services, operational efficiency and the way in which costs are managed, to name a few. South African private universities do not receive any government funding like their public counterparts and, hence, need to depend on student fees as their main source of funding. This limited source of funding makes it difficult to compete with the State funded universities, as the cost of their courses is far more expensive than those of public universities. It is not possible to manage the income side of their budget and therefore private universities need to manage the cost side of their budget. A survey was carried out in 2005, to examine the costing systems of forty-five registered private universities in South Africa. The study revealed that these institutions were still relying on traditional costing systems. In 2010, a paper by this author indicated that the cost to implement a new system far exceeds the benefits. However, since then many private universities have merged and established partnerships which enabled them to compete against the public universities. This paper suggests a new approach to manage costs at private universities using an activity-based costing approach.

Keywords: private universities funding, costing systems, megers, activity-based costing.
JEL Classification: M41.

Introduction

Since the emergence of democracy in South Africa in 1994 (Nuttall, 1997), the government embarked on an intensive restructuring of education in South Africa. A major focus was the merging of public universities so as to eliminate duplication and inefficiencies. This resulted in mega public universities being created. Further to the change in the public higher education sector, major legislative changes occurred in private universities in South Africa (Naidoo, 2010). This resulted in that many private universities in South Africa are closed down (Macgregor, 2008). Private universities receive no government funding and rely solely on donors and investors to fund their activities.

One of the core drivers of any business is the profit motive and private universities in South Africa, like other universities around the world, have generally pursued the profit motive even though their mission statements may not openly declare this (Kruss, 2004; Mabizela, 2002; Vergnani, 2001; Froneman, 2002; Levy, 2002). One of the major challenges of private universities is the perception that private higher education is not in the public's interest, and that public universities are responsible in delivering this 'public good' which the government should regulate and fund (Kruss, 2004). The government and students are often sceptical of private provider's promises and tend to focus on their ulterior motives, which are their profit making intentions (Kruss, 2004).

The merger of public universities, stringent legislative requirements for private universities, the public's perceptions of private universities and the governments' lack of funding resulted in a dramatic decrease in enrolments at private universities. Many private institutions had to close down, due to the stringent legislative requirements and funding (Vergnani, 2001). This paper examines the costing systems adopted by private universities based on a survey undertaken in 2005. An analysis of the costing systems is then discussed to highlight it shortcomings and suggest a new approach, based on literary evidence.

1. Costing systems

A costing system is responsible for the accumulation of all costs of the business. The data obtained by the costing system can then be used essentially for product or service costing and the costing of responsibility centres (Langfield-Smith et al., 2012). Product costs or service costs can then be used for planning, controlling and decision-making.

One of the major problems of a traditional costing system in the manufacturing environment is the allocation of overheads (Pierce and Brown, 2006). Traditional costing systems often use a single, volume-based cost drivers, based on some input into production like machine hours or direct labor hours or some output from production like the number of units produced (Ismail, 2010). Modern manufacturing firms have realized that due to product differentiation that overheads now represent a greater proportion of their product cost (Skoda, 2009, Granof et al., 2000).

In the past, direct materials and direct labor represented the higher proportion of product costs. Modern manufacturing has now realized that upstream

costs like design costs, research and development and supply costs have dramatically increased and downstream costs like marketing and customer service has also increased. Hence manufacturing overheads alone are no longer the only overheads that must be factored in, when determining the cost of a product. By using traditional costing systems manufacturing firms "cross subsidized" (Chan and Lee, 2003) their different products since the traditional costing system costed high volume products, at an higher price and low volume products at a lower price. Hence products were costed incorrectly (Cooper and Kaplan, 1988).

Research into traditional costing systems of manufacturing firms is relevant to a service business such as universities. Service firms have the following characteristics:

- Service outputs are intangible.
- Service outputs are often heterogeneous.
- Often services are consumed as they are produced.
- Services are perishable and cannot be stored (Langfield-Smith et al., 2009).

Universities face a similar problem to manufacturing firms, in that a large proportion of their service costs are overheads. Universities usually separate themselves into responsibility centres, such as Departments, Schools, Faculties, etc. Departments or Schools allocate revenue from the central budget to carry out their operations. Certain costs can be traced to a service but most costs have to be allocated. The problem faced by universities is that they are still using traditional costing systems that usually depend on a single, volume-based cost driver.

A solution to the traditional costing system is to use an activity-based costing system. In an activity-based costing system, overheads are accumulated in different cost pools and an overhead rate is used to allocate these overheads, using some relevant activity driver. These activity drivers may not be production volume-based. Hence, several cost drivers are used under activity based costing (Mitchel, 1996; Satorius et al., 2007). Each service allocates, an overhead cost if they consume that cost. For example, assume the cost pool total for maintaining a student's record is $100,000 and there are 100 000 students, then the activity rate for maintaining students records is $1.00. If the School of Accounting has 770 students, then the School will be charged $770.

2. The current state of costing systems at private universities

2.1. Cost analysis. The tracing of costs to a cost objective simply implies that the costing system is recording consumption of resources by a particular object. Figure 1, focuses on larger private universities (enrolment greater than 600 students) and the tracing of costs. The figure indicates that tracing mainly occurs at the Faculty/School or Department level (mean of 4.8) rather than at course or student type level. One of the reasons for this situation may be related to the organizational structure and control. Since tracing tend to occur at Faculty level it implies a proper analysis of costs and its cost drivers is lacking. If costs were traced from course and student type level, then an audit trail will relieve the reliance at other levels. It must also be noted that tracing at the research level is non-existent. This may be due to the lack of government incentives for private universities research.

Figure 2 differentiates between direct and indirect costs considered in tracing costs. Most direct costs are traced through to course level, but some indirect costs aren't. An alarming number of institutions did not answer this question, which may be due to confusion over the question or the fact that they do not have a specialized cost and management department. A large number of respondents don't trace costs for research (58%).

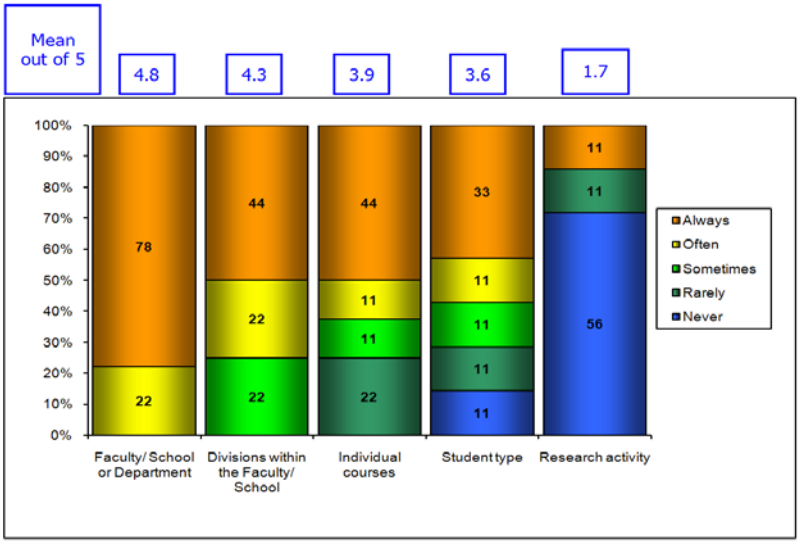

Fig. 1. Tracing costs – larger private universities

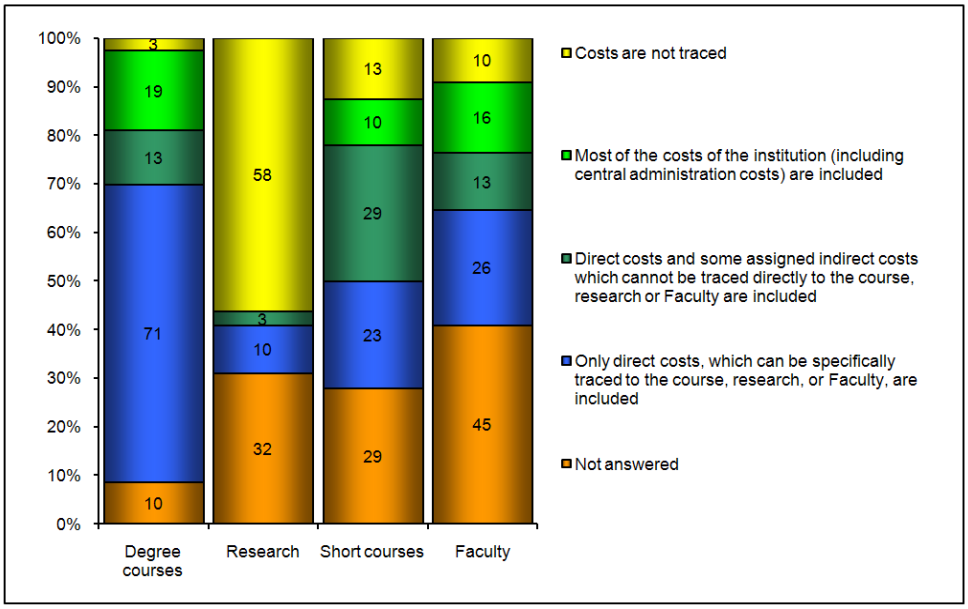

Fig. 2. Tracing of costs

2.2. Cost allocation basis. The allocation of indirect costs used by private universities confirms the use of traditional costing methods. Even though departmental overhead rates are used, a single or dual driver is still used by institutions. About 67% (Figure 3) of respondents assign indirect costs on the basis of departmental size. The size of the department is not a reliable cost driver as it does not fully explain the consumption of resources adequately or accurately. This justifies the need for other activity drivers.

Similarly a number of respondents (64%) indicated the use of student numbers in allocating indirect costs. This indicates the reliance on volume based drivers of the traditional system. In respect of the use of direct costs plus an overhead recovery rate, 42 percent of the institutions have used this method and 23 percent have always used this method. However, 39 percent of the respondents did not answer this question or never use this method, which implies that they do not understand how to use and apply this method within their institutions.

A few (ten percent) have never used this method of assigning costs on the basis of employees, whilst 61 percent have used this method. A large proportion (29 percent) always uses this method indicating the popularity in its use. This could be indicative of the fact that the major costs in higher education institutions are linked to salaries, i.e., employee related costs. A reasonably large proportion (48 percent) of respondents, utilize area as a basis. With a greater proportion having used this method it can be argued that it is easy to apply and assign indirect costs using the area as a base.

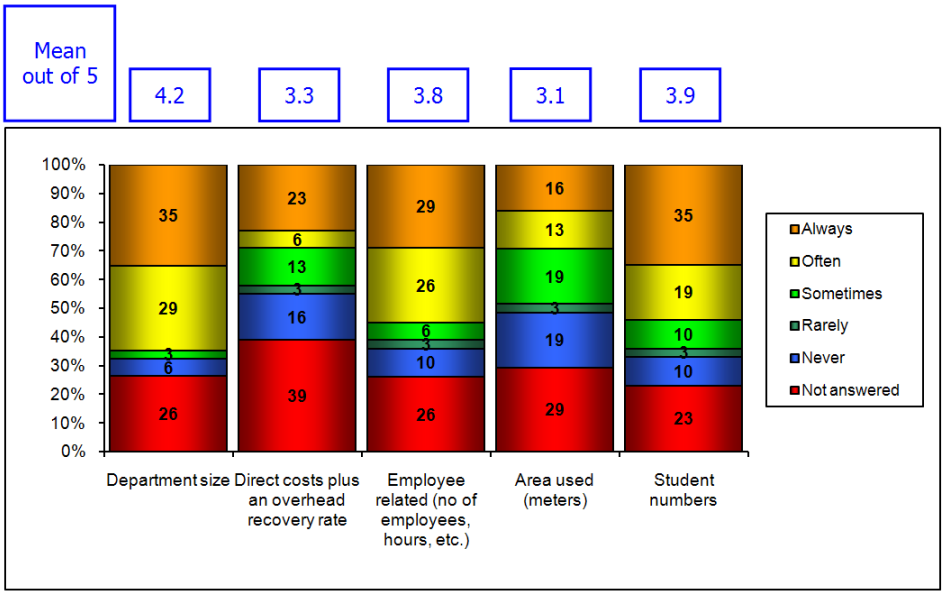

Fig. 3. Cost allocation basis assigned to service departments

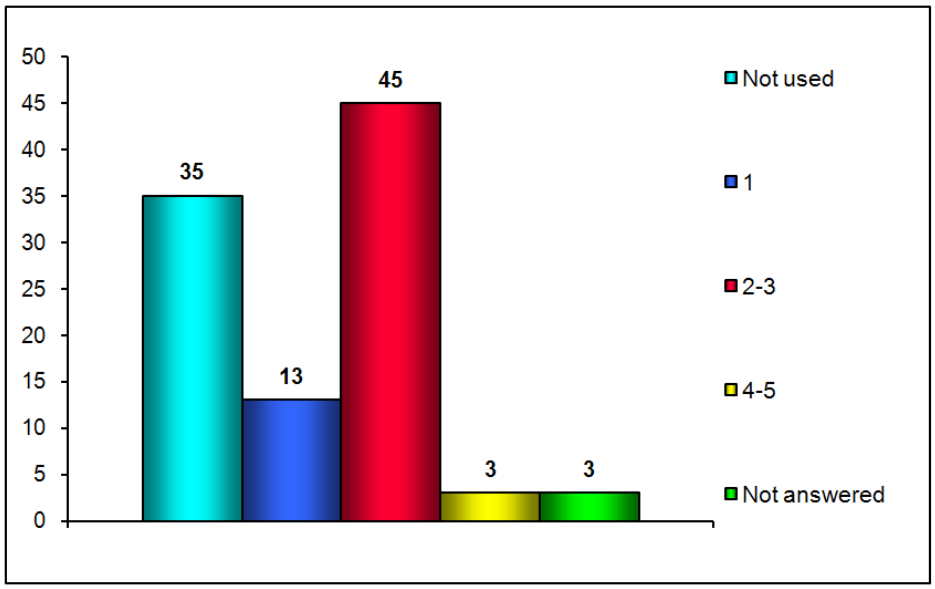

Fig. 4. Number of different allocation methods used to allocate costs

2.3. Number of different allocation methods used to allocate costs. Very few institutions have more than 3 allocation bases. This further supports the use of a traditional cost system. Only three percent of respondents use 4-5 allocation bases (Figure 4). This is rather concerning, as to how they determine their pricing of program. A possible way in which they price their program could be for them to use the rates of other institutions which may not be relevant to their institutions based on their institutions parameters.

2.4. The most important cost driver at private universities. According to Figure 5, the majority of institutions consider full costing of direct costs plus a fixed percentage overhead to be the most appropriate method of costing. This implies that both, large and small institutions depend on traditional cost drivers. However, there are a significant number of institutions that use activity based costing. The fair distribution of the different cost drivers indicate that institutions understand the principles of the different cost systems and are able to relate to a method, which is reliable and accurate for better-cost allocation in higher education institutions.

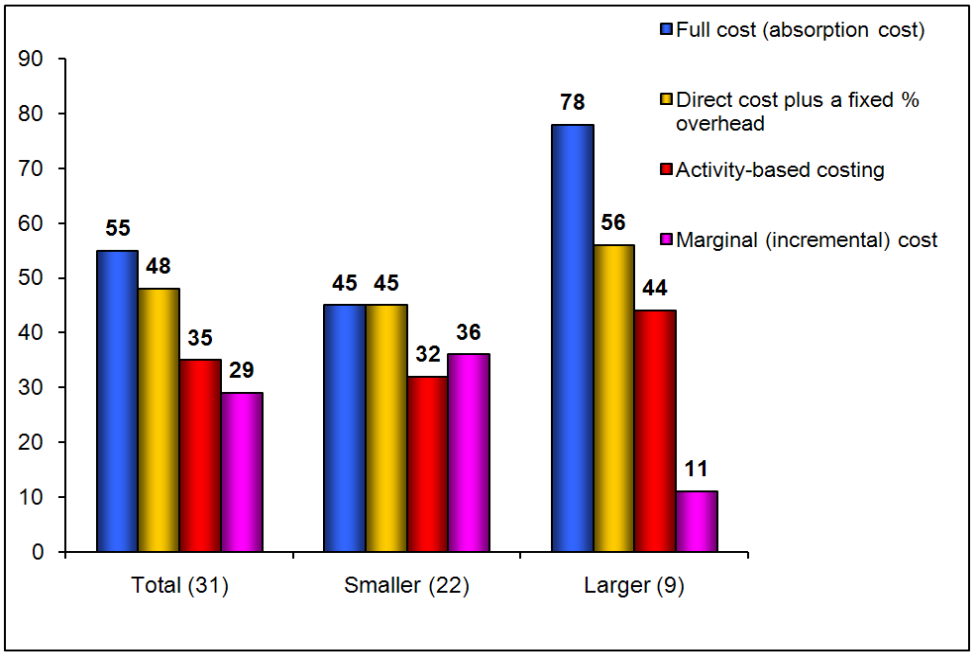

Fig. 5. Most important cost driver

2.5. Most appropriate cost driver for allocating costs. Figure 6, indicate that most respondents use the appropriate cost drivers. For finance and administration department, it is quite evident that departmental income and expenditure, salary amounts and staff size is predominantly used to allocate costs.

For rentals, water and electricity and rates, space used is the predominant driver to allocate costs. The student size is used to allocate costs for the library. This is in keeping with what the industry uses as a basis of allocation. However, the introduction of an activity based costing system will enable a more accurate allocation of costs.

Some institutions also indicated that the following additional drivers were used:

- Network points for allocating computer related costs.
- Value of books as basis for library books.
- Number of transactions for finance related costs.

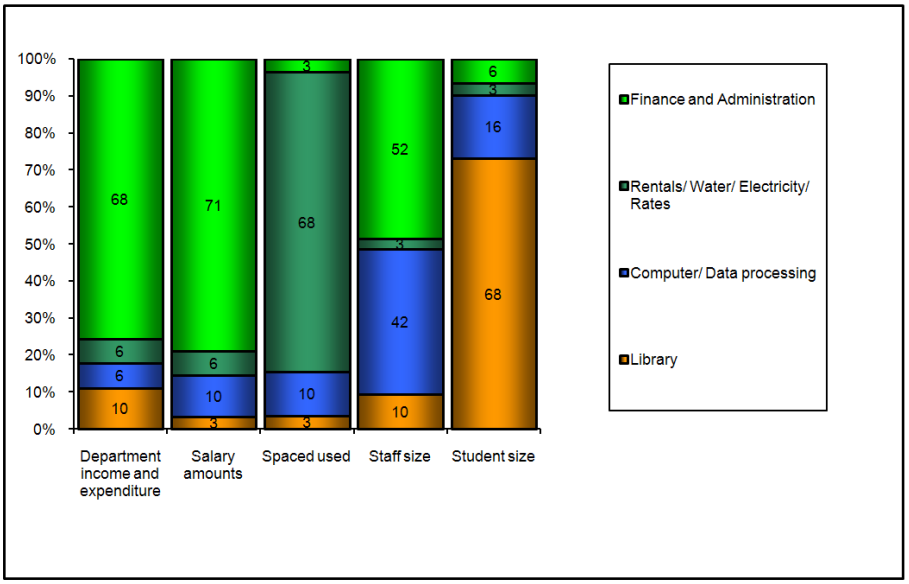

Fig. 6. Most appropriate cost driver for allocating costs – all institutions

2.6. Process of change from traditional to a modern system. Figure 7 indicates that seventy percent of all respondents are in the process of changing from their traditional costing systems to modern systems. It is difficult to determine what they imply by modern systems, but one of the implications is the general move towards activity based costing and management. The next part of the paper focuses on the benefits and implementation of ABC at universities.

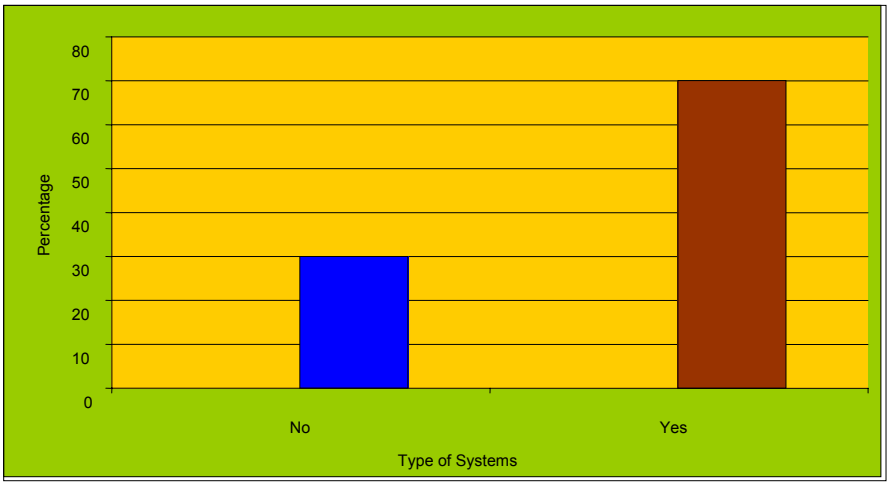

Fig. 7. Changing from traditional to modern cost systems

3. ABC system at universities

Various benefits may be obtained by converting from traditional costing systems to an ABC system. According to Tatikonda and Tatikonda (2001), the following benefits may arise:

- Beter cost information.
- Better identification of resource needs.
- Better distribution of scarce resources.
- Better course and program mix.
- Better cost control.
- Better public relations tool.

Universities are slow to take on the implementation of ABC systems even though the benefits outweigh the costs. However this situation is evident in public

universities that receive government funding, and hence the need to manage costs tend to be ignored. More recent studies indicate that governments are now limiting its funding to universities and this demands that universities now examine their costing systems as to whether it allows for better cost analysis of its service departments (human resources, IT etc.), activity centres (student services, examinations) and academic courses for the purpose of budgeting, performance evaluation and resource allocation (Trussel and Bitner, 1996).

Respondents to a study in the UK indicate that about a fifth have adopted ABC systems and it is beneficial to them and things may change in the future due to pressures from the funding bodies (Cropper, 1996; Mitchel, 1996; Cropper and Cook, 2000). Trussel and Bitner suggest that currently costing systems are more functional based using some volume based drivers biased towards student numbers. ABC seems to be a better choice to these functional systems.

It is important for the costing system to determine the total costs to provide courses, both direct and indirect costs. Very often universities ignore ratio of their direct to indirect costs due to the use of single overhead drivers for indirect cost allocation. Support costs, like IT, library, student services, examinations are usually considered fixed costs and allocated on some arbitrary basis instead of being allocated on some reliable basis. This makes it difficult to identify which courses are self-sustaining, over-priced, under-priced or loss making.

In a university environment, some Departments or Schools service each other and usually interdepartmental or school costs are not accounted for. Even though the servicing department incurs costs, departments are not charged for these costs in terms of their accountability.

In order for a system to be successfully implemented it is important that:

- Top management participates and supports it.
- There is a link to competitive strategy and continuous improvement.
- There is a link to performance evaluation and evaluation.
- There is sufficient resource and necessary organizational culture (Jarrar et al., 2007).

4. Some examples of problems with traditional methods and using an ABC system

The following example shows the information obtained from a traditional costing system and an ABC system.

Table 1. Traditional vs. activity-based costing systems

Traditional costing systems		Activity-based costing systems	
Salaries	$200,000	Enrolling students	$100,000
On costs	$40,000	Designing a new course	$50,000
Consumables	$80,000	Teaching engineering	$150,000
Travel	$20,000	Tutoring students	$20,000
Depreciation	$60,000	Assessing students	$30,000
		Graduating students	$50,000
Total	$400,000	Total	$400,000

Source: Ernst and Young (2000).

Assume that one of the major activities within student administration is "graduating students" which cost $50 000 based on salaries of $35 000; occupancy of $10 000 and consumables of $5 000. Assume also that 500 students graduate of which 300 are international students, 100 government funded and 100 fee-paying (Ernst and Young, 2000).

The traditional system will not be able to capture that the cost of the activity is $50 000, the activity driver is the number of graduates, with a cost of $100 per graduate and would have also incorrectly allocated the cost to the different student types.

Another way in which ABC may be used at private universities is indicated in Table 2 below for a Teaching Department. Different departments perform similar activities but consume the resources differently. For example, the Department of Accounting may make use of IT services more than that of the Department of Business Economics as many accounting students and staff may access different software packages that are used for reporting and management purposes. Further, the Accounting Department may also need to access research databases and the internet for research publications and the use of e-learning software in their delivery.

Table 2. Activities and activity drivers for the Teaching Department

Possible activities	Activity drivers
Teach lectures	Number of lectures
Teach tutorials	Number of tutorials
Mark assignments	Number of assignments
Set exams	Number of exams

Table 2 (cont.). Activities and activity drivers for the Teaching Department

Possible activities	Activity drivers
Mark exams	Number of exam scripts
Assist students	Number of students
Type handouts	Number of pages
Print handouts	Number of students
Define syllabus	Life expectancy of the subject
Maintain class records	Number of students
Order materials	Number of inventory items
Maintain departmental accounts	Number of staff
Prepare departmental budget	Hours to produce

Source: Langfield-Smith et al. (2006).

Conclusion

Although most private universities do not have a separate cost management department, it is quite evident that they are performing this function which is integrated into its financial accounting department. The fact that institutions are tracing costs and using different allocation basis, is a positive indicator that the fundamental principles of cost management is in place. The positive response by institutions on changes to their traditional costing systems, to modern costing systems indicates that the dynamic changes in the higher education sector in South Africa has compelled private institutions to focus on other systems like, activity-based costing. This study highlights the benefits that can be gained by private universities if they wish to compete with their powerful public counterparts in competitive and vibrant market. This paper supports the implementation of an ABC system using the literature as its evidence.

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