

Activity based costing (abc) case study: exxonmobil



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This paper presents an assessment of the set up of an activity-based costing (ABC) for Exxon Mobil, a global oil company. The discussion in the paper is structured as follows:

- Setting up an activity-based costing for Exxon Mobil- This first section presents an overview of activity-based costing and focuses on how such a system could be set up for Exxon Mobil.
- Stages involved in designing ABC systems- The second section of the paper presents the stages involved in the set up of an activity-based costing system.
- Selection of cost drivers- An important factor in the set up of an activity-based costing system is the selection of the cost drivers. The third section of the paper discusses this.
- Calculation and Examples- The fourth section presents an example calculation for the activity-based costing for Exxon Mobil.
- Limitations of information from ABC systems- The fifth section of the paper presents the limitations and issues in the use of activity-based costing.
- Conclusion- Finally, the last section summarises the arguments presented in the paper and highlights the key points to conclude the paper.

A. SETTING UP AN ACTIVITY-BASED COSTING FOR EXXON MOBIL

Activity-based costing is utilised to improve business processes through behavioural, business and accounting practices, and “ focuses on costs

associated with activities, but also evaluates whether those activities add value, thus providing a means of understanding how to most effectively reduce costs" (Maiga & Jacobs, 2003).

This paper discusses specific areas that will help ExxonMobil in setting up an activity-based costing system. It is possible to set this up for ExxonMobil to drive its performance but this will require two key principles in pursuing this approach:

- Commitment from senior management- Setting up the ABC system will require strong commitment from senior management as there may be challenges and questions raised by different stakeholders as this approach is pursued.
- Transparency in measures- In addition to commitment, setting up an ABC system will also require that the organisation be transparent in its financial and operating figures in order to achieve the most benefit from implementing such a system.

B. STAGES INVOLVED IN DESIGNING ABC SYSTEMS

There are several key stages that organisations need to follow in designing ABC systems in organisations. The key stages in designing ABC systems are as follows (Allott, 2004):

- Determine scope and key activities performed- This stage involves the development of key objectives and activities for departments and the organisation. The challenge in this stage is to ensure that there aren't too many activities that then render the analysis as inaccurate given the detail required.

- Apportion direct staff time and assess the organisations' resources required-The management within the businesses then need to assess the resources required to work on the key activities defined in the first stage. This stage requires the evaluation of where employees spent their time, as this will be apportioned as part of the ABC system.
- Add other direct costs- Aside from the costs related to the staff and their time, other direct costs will also need to be included as part of the analysis and measurement.
- Allocate department and corporate overheads and identify the key outputs produced- The outputs for the activities determined in stage one should be defined. These outputs should be largely measurable though there could be some activities that won't have directly measurable outputs. From this, departmental and corporate overheads can then be allocated.
- Split into value-adding and non-value adding activities and also assess activity-level drivers and cost-input drivers- The fourth stage is to assess the value-adding and non-value-adding activities, and also the factors that cause the activity to occur which includes both activity-level drivers and cost-input drivers. The activity-level drivers are related to the frequency of the occurrence of the activities while the cost-input drivers are related to the cost of performing the activities for the organisation. Cost drivers are particularly important in designing ABC systems and the next section discusses this concept further.
- Calculate unit cost- Once all the measurements and factors have been defined, it is then possible to calculate the unit cost for various output measures. This will then drive the next stage.

- Use findings to determine improvement opportunities- In designing and implementing an ABC system, there should be well define improvement opportunities that the organisations will target. This will be based on the findings that result from the analysis and are important, as this will drive the actions of the employees and the organisation. Thus, these improvement opportunities should be initiatives that are achievable and, at the same time, could impact the performance of the organisation significantly, if achieved.

The stages defined above are the high-level key stages in designing and implementing an ABC system for organisations.

C. SELECTION OF COST DRIVERS

As mentioned in the previous section on the stages of designing an ABC system, the identification of cost-input drivers is important in the proper implementation of the ABC system. This section discusses the selection of cost drivers in greater detail in the context of an ABC system. Cost drivers play an important role as the objective in identifying the cost drivers is to be able to determine how the organisations can manage and control the costs effectively and make beneficial changes to how these costs drive the organisation. The end goal then is to have lower costs for the firm and better operational and financial performance which could lead to strong competitive advantages for organisations versus the competitors in a sector.

There are some principles that are important in the identification of the cost drivers for an ABC system. The selection of cost drivers is important for the following reasons:

- Drive performance of organisation- The ABC system can be used through the cost drivers to drive the performance of the organisation.
- Improve internal understanding- Having the right cost drivers selected for the ABC system will enhance the understanding of the employees of the value-adding activities and be able to focus on the activities that merit the most time.
- Address external concerns- Finally, some external stakeholders will need to be catered to in the selection of cost drivers. The next few paragraphs show how this is important.

Aside from an internal assessment of the key cost drivers for an organisation, there are also factors that could come into play. For example, one of the factors driving the selection of cost drivers is external pressure on these cost drivers. Given the increasing focus on the environment in recent years, the pressure to control and manage the environmental costs especially in industries such as the oil sector has increased with investors concerned about potential liabilities that could impact the firm and the general public, including the government, concerned about the health consequences that may result from toxic emissions and materials (Lee, 2005).

These environmental costs can be significant as seen from the following examples (Lee, 2005):

- W. R. Grace had charges totalling US\$50 million in 1998 for environmental remediation
- Koch Petroleum Group spent significant amounts over the course of a few years for environmental impact and refinery pollution: circa US\$7

million in 1998, circa US\$8 million in 1999, and circa US\$2 million in 2000

- NCH Corporation charged earnings in the amount of circa US\$16 million in 2000 for environmental remediation
- Unocal provided provisions amounting to US\$22 million in 2002 for environmental remediation and lowering earnings
- Overall for industries such as utilities, steel and metals, oil, paper, and chemicals, which deal with environmentally-sensitive areas, estimates place “ environmental expenditures to be annual spending of over 1% of revenues”

Thus, with the pressure externally to manage environmental costs, this has become a cost driver that firms such as Exxon Mobil need to include in an activity-based costing system. The key reasons for including this cost driver are as follows (Lee, 2005):

- Environmental issues continue to be increasingly focused on by the public and environmental groups globally
- Environmental decision-making is thus critical and information to be able to manage and control this factor needs to be collected by the relevant firms
- A proactive stance in managing environmental costs can be very beneficial for firms in these environmentally-sensitive areas particularly “ in terms of risk reduction, prevention of liabilities, and the preservation of firm reputation”

D. CALCULATION AND EXAMPLE

In implementing an ABC system in ExxonMobil, it is important to have an initial review of what the cost drivers for Exxon Mobil could be in terms of the design of an ABC system. Before continuing on this path, a number of assumptions have to be stated: (1) this is a high level example of a calculation for ExxonMobil as an in-depth review has not been conducted to properly do an ABC system for the organisation, (2) only quick estimates are presented given that these are based on an outside-in perspective utilising existing financial reports, (3) no specific details have been provided yet by the organisation.

The focus of this analysis is only on the Upstream (Oil Gas Exploration and Production) division. A review of their summary annual report indicates that the following could be the key cost drivers that Exxon Mobil would focus on for their ABC system:

		Canada	Outside	
2007				
Revenue	US	So. America	America	Worldwide
Production Costs	2,275	2,206	5,852	10,333

Dep'n and depletion	1,493	1,256	6,159	8,908
Exploration Expenses	282	273	947	1,502
Taxes	1,347	126	8,258	9,731
Income tax	2,429	1,190	23,924	27,543
Total Costs	7,826	5,051	45,140	58,017
Number of units (mn)	232	167	1,126	1,526
Unit Costs	33.70	30.16	40.09	38.03

With re-allocation

Production Costs	2,048	1,985	6,300	10,333
Dep'n and	1,	1,256	6,159	8,908

depletion	493			
Exploration Expenses	254	246	1,003	1,502
Taxes	1,262	118	8,351	9,731
Income tax	2,276	1,111	24,156	27,543
Total Costs	7,332	4,716	45,969	58,017
Number of units (mn)	232	167	1,126	1,526
Unit Costs	31.57	28.16	40.83	38.03
+ other central costs	8.00	8.00	12.00	10.95
(per unit)				
Total unit costs	39.	36.16	52.83	48.98

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Revenue per unit	52. 42	49. 40	55. 55	54. 40
Profit per unit	12. 85	13. 24	2. 72	5. 42

The above calculations are based on a number of assumptions made for the purpose of showing how using an ABC system could alter the results of the performance of the regions and allow the organisation to then make better decisions. The assumptions were made up in this scenario and it could be the other way around in that the greater costs end up in the US and Canada / South America regions. The objective in showing these calculations were to highlight the impact that activity-based costing could have in generating a deeper understanding of the costs that are incorporated in the financials of organisations.

The way the costs are then broken up and allocated to different cost divisions will have an impact on these divisions and the decisions made. The important aspect to consider is that the ABC system should identify the right allocation of the costs through an understanding of the time spent by the staff including other factors that the organisation may deem important in the ABC system.

E. LIMITATIONS OF INFORMATION FROM ABC SYSTEMS

The limitations of information from ABC systems can be looked at in two ways: (1) limitations in establishing and implementing the ABC systems, and (2) limitations in the use of the information resulting from the ABC systems implemented in an organisation. This section looks at both of these limitations.

E. 1. Limitations in establishing and implementing the ABC systems

One of the key challenges in implementing an activity-based costing system is the ability to collect the correct information for the proper use of the system. Throughout the years of the use of the ABC system, a number of limitations have come to the fore. The key limitations most often cited have been the following:

- Subjectivity in distribution of time. A key concern of users of the ABC system was the proper distribution of time among the key activities that employees worked on, and the subjectivity in allotting the time raised some concerns and issues in the potential reliability of the system (Journal of Accountancy, 2008). In recent years, there have been improved processes which were designed to minimise the subjectivity in the distribution of time by employees, particularly with the approach used in time-driven activity-based costing with a key benefit in simplifying the process (Lambino, 2007). However, this has not been well communicated and there is still a general concern about this issue for the ABC system.
- Complexity of retrieving information for the ABC system. Another factor that had hampered the use of the ABC system has been the

general feeling that the retrieval of information was too complex and that the input required in order to complete the process for the ABC system was too demanding (Max, 2008). Similar to the point above, there have been further developments which have tended to minimise the complexity surrounding the retrieval of the information needed for the ABC system but this has not been accepted widely though the trend is changing.

The two limitations highlighted above are the key reasons that implementation of the ABC system has been limited. In organisations where the ABC system has been implemented, the two limitations identified have affected the use of information churned out by the ABC system. This is discussed further in the next part.

E. 2. Limitations in the use of information resulting from ABC systems

For the organisations which have made the decision to implement the ABC system, there are still limitations in the information that need to be considered as the information is utilised in the organisations' decision-making. The key limitations are the following:

- Costing not an exact science. The output from the ABC system remain as estimates and are impacted by the subjectivity of some of the inputs as described in the previous part of the this section. The use of cost averages and estimates lessens the transparency of the cost and profitability information and thus results in a key limitation in the use of the ABC system (Max, 2007).

- Potential misuse of information. This argument is not be construed as to be done intentionally. But where the information is not properly linked between activities and processes, the potential exists to have inaccurate results which then impact on how the information is utilised (Crance, Castellano & Roehm, 2001).

F. CONCLUSION

It is possible to implement an ABC system for ExxonMobil. A number of conclusions and follow up steps can be highlighted:

1. High level draft of implementing was shown to be possible. Next step is to have a proper review to follow the complete stages if the organisation were keen to go ahead.
2. Detailed process is needed to complete an ABC system implementation - ExxonMobil will need to commit to this and assign resources in order to push the effort to have the ABC system implemented.
3. Commitment and transparency important for the implementation - It is critical to get the buy-in and support of top management and the key managers of the organisation.

Through these next steps, it is possible to move into the next stage of having the ABC approach designed for ExxonMobil and implemented in the organisation.

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