

Life cycle costing

Business



Life-cycle costing, as stated by Siegel, Dauber & Shim (2005, p. 293), can be described as a method of evaluating the total cost of a product throughout its entire life from its production to disposal. This method is also referred to as the whole life costing technique and it is designed mainly to address all the essentials involved in the cost as well as to generate a spend outline of the product or equipment over its lifetime. Life cycle cost is therefore the cumulative cost of a product ownership from the time it is acquired, its operations, its maintenance and finally its conversion or recycling.

Thus life-cycle cost is the summation of all the costs estimated between the inauguration and disposal stages as predicted by an investigative study (Dhillon 1989). Life cycle costing analysis is performed so as to determine the most effective approach on cost from several choices so as to come up with the lowest long-standing ownership cost. Life cycle cost can be calculated using the following basic formula: Life cycle cost equals the sum of the capital cost and the present maintenance together with the energy cost, minus the recovery value, where the capital cost includes all the initial design and installation expenses and it is considered as sole payment which does not recur and it is only payable at the commencement of the project or financial year (Marquez 2007, p. 98). Maintenance cost is the summation of all the maintenance and operation cost that are incurred every year. This includes all expenses spent on insurance, inspection, operators' wages, taxes as well as all programmed maintenances.

The cost of energy falls under its own category and it includes all the expenses spent on fuel or any other form of energy. The recovery value on the other hand is the net value of the equipment calculated in the final term

of the life-cycle phase. Normally, this value is usually assigned twenty percent of the initial cost for equipment that is movable (Marquez 2007). The analysis of life cycle costing has been associated with four main benefits. These include; evaluation of options in which the consumer gets a chance to assess all the competing alternatives based on the life-time costs before purchasing the product. The other benefit of analyzing the life-cycle costing of a product is that it improves one's awareness on the total cost of the product.

This therefore helps many business managements to determine the most cost effectual areas of the product or equipment they plan to purchase. Jawahar-Lal (2008, p. 331), states that life-cycle costing analysis is also beneficial in that it improves the accuracy in forecasting the cost outlines of a product. This is because, it gives consumers the opportunity to fully and accurately estimate all the costs associated with procurement. This therefore improves the accuracy in forecasting and decision making for future long-term expenditure.

Lastly is the performance against cost trade-off analysis benefit. As already mentioned that life-cycle costing involves not only the purchasing cost but all the expenses that the product may cost from production to disposal, the performance against cost trade-off allows for the cost evaluation to be performed against all the variables that attribute to the procurement options (Jawahar-Lal 2008). Environmental costs are just but a percentage of the many costs that a company or a business organization incurs during its operation period. Environmental issues should therefore be integrated into the life-cycle cost because their costs can be reduced through adjustments

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of the decisions and activities that affect the operations of the organization. Environmental issues that can be integrated into life-cycle include minimization of waste. Better environmental management can also improve the performance of the organization in terms of safety and health precautions (Giudice, Rosa & Risitano 2006).

Also when the management realizes and understands the source and extent of the cost incur on environmental issues affecting the organization, then it will be in a better position to accurately determine the costing of the products and services thus dropping off all the unbeneficial activities. Detailed accounting of the environmental costs is therefore necessary since it enables organizations to realize the benefits of producing environmentally-cognizant products which will in the long run cost them less particularly on the life-cycle aspect. Some of the environmental costs that an organization may incur include; fines, penalties and other liabilities related to environmental issues such as dumping of waste, injuries resulted from product consumption, resettlement costs etc. The estimation of these costs is usually made in probability terms based on their occurrence. There are also the costs incurred through regulation and monitoring of the environment, upfront and backend costs. These costs are usually hidden and Giudice, Rosa & Risitano (2006, p.

135), suggests that the managements of organization must be very careful for them to realize these costs. For instance, the upfront costs which are incurred earlier before the operations of the organization commences usually tend to be forgotten or not included in the total costs all together. Such costs include the evaluation and qualification of the various suppliers, assessment
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of substitute pollution controlling equipment and sitting of amenities among others. Monitoring and environmental regulatory costs include all costs related to environmental indemnity, costs incurred during the acquisition of permits, recordkeeping, audits that are made voluntarily, recycling, and remediation. Most organizations tend not to feel the weight of these costs since they allocate them to the overhead accounts instead of the allocating them directly to the production accounts (Giudice, Rosa & Risitano 2006).

Backend costs on environment are on the other hand the costs incurred during decommissioning of facilities such as laboratories or during the take back of a product. These costs are also overlooked during the initial decision making processes since they are incurred in some later dates. There are also other environmental costs which are not included in the life-cycle costs. Such costs are incurred when the company wants to maintain its image reputation as well as excellent relationships with consumers, employees, and other investors. These costs may include the expenses incurred on environmental reach-out activities such as tree planting projects and community clean ups, as well as on the publication of reports pertaining to environmental issues (Giudice, Rosa & Risitano 2006).

All these costs can therefore be integrated into the life-cycle costing by applying the appropriate life-cycle accounting approaches. Life-cycle cost accounting can be described as the gathering followed by aggregation of data on the cost incurred in the lifetime of a product for the purpose of decision making, lending, regulation and management of organizations (Jawahar-Lal 2008). Accounting, in most cases affect the behaviors and managements in organization especially where profits and loses become the

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concerns of the day. There are various approaches through which life-cycle accounting is done. These include; the throughput accounting method in which only the direct raw material costs are traced. All the other costs that are incurred are treated as expenses and are expressed throughout the operation period.

This approach however does not reflect the actual value of the costs since it all the other costs incurred during manufacturing up to disposal are categorized as expenses and not capital. The next approach on life-cycle accounting is the direct approach in which only the varying manufacturing costs are treated as capital while all the other constant manufacturing costs are treated as expenses incurred during the operation period (Emblemsvag 2003). The limitation with this method is that not all the costs are appropriately accounted for since the fixed costs related to the production are not represented as expenses instead of capital. The next method that is of great importance in life-cycle accounting is the full costing accounting approach and is also referred to as the full absorption approach. In this method, all the production costs are treated as capital and are allocated as asserts in the organization (Emblemsvag 2003, p. 29).

Following this, the prices of the goods and services produced are arrived at in way that all the costs incurred during their production, including environmental and other societal related costs, are reflected. However, the costs of these products are treated as expenses when these products are sold. The last accounting approach on life-cycle costing is the activity based approach. According to Emblemsvag (2003, p. 57) this approach evaluates the costs of production through all the activities involved i. e.

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the products cost is allocated to activities and then transferred to the products that used these activities in during their production. In other words, the products use activities which in turn use resources. This method is thus more accurate than the other methods but it is not accepted in external reporting because it treats these costs in an informal manner. All the above discussed environmental costs are incurred by most organizations yet they are not fully quantified or allocated in the appropriate accounts. It is therefore wise for these organizations to identify, quantify and appropriately allocate them.

By doing this, the organization will be motivated to establish alternative environmental protection measures which will reduce on the costs. An effective accounting approach is therefore necessary if the organization is to accurately account for all the expenses so as to improve its performance. The best life-cycle accounting approach that can contribute to the organizational performance through the organized integration of environmental factors into the life-cycle costing is the full cost accounting. This is because it does not leave out any expense that is incurred during production. It takes into consideration all the costs that have been incurred during the production to the disposal of the product (Emblemsvag 2003, p. 29).

Thus by doing this, most organization will realize the impacts they have on the environment and can avoid unnecessary costs by purchasing only products and equipment that are recyclable, energy proficient, that have used less packaging and are upgradeable. This was the organizations will cut on the unnecessary incurred during disposal or recycling of these products.

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In the same line of thought, most organizations will tend to avoid products that contain heavy metals, toxics, carcinogens and ozone degrading chemicals among other environmental harmful substances. To ensure that every cost has been properly accounted for and minimized if possible, then the methods of life-cycle costing should be improved so as to manage the environmental issues and all other associated costs effectively. Life-cycle costing methods can therefore be improved by adopting more advanced technologies such as advanced computer software that are more accurate and efficient (Marquez 2007).

Sophisticated software will also be able to determine the areas that require a lot of resources and distinguish them with those that require less resource. As a result the management will be in a position to monitor and minimize the costs where necessary. By applying such techniques, the organization will be able to trace all the expenses that are incurred during the entire life of the product and they will tend to avoid the involvement of products that are costly in terms of environmental concerns. Also, to improve on the efficient of these methods, an online database should be generated for all the systems in the organization so that all the costs that are incurred are entered into the database and be reflected on all the systems (Marquez 2007). This will reduce the confusion and misplacement of data as compared to when this information was handled manually. Also, incase one system crashed, the other systems would still have the data and this was the concerns of data lose will be minimized.

This will also enable the organization to have updated records on all the costs it incurs thus it will become easier for the management to identify and

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incorporate the environmental costs into the appropriate accounts. Thus when all the methods of life-cycle costing have been improved, errors in calculations will be minimized and organization will not incur the unnecessary losses they have in the past been incurring.