

Chapter 5

Life Cycle Costing for Sustainability

Mustafa Üç

Epoka University, Albania

Cemal Elitaş

Yalova University, Turkey

ABSTRACT

Life cycle costing supports sustainability by stressing the costs not only in the production and selling phases but also considering the costs which are incurred after the sale of the products. This chapter reveals main characteristics of life cycle costing as follows: Life cycle costing also includes production costs which are; (a) research and development costs, (b) marketing, selling, distribution and design costs, (c) and also user costs. User costs have three dimensions: transaction costs, maintenance costs, and disposal costs. Therefore one can simply assert that life cycle costing has a broader approach in the calculation of the costs compared to other conventional costing systems. After introducing the main characteristics and basic definitions of life cycle costing, this chapter will discuss the implementation of life cycle costing in comparison with other conventional costing systems. Following this, we will analyze the link between life cycle costing, waste management and sustainability. Overall review will be done in the conclusion.

INTRODUCTION

The businesses are the catalyst in the development of globalization and some problematic impacts of their operations on the environment become an international issue. The largest corporate initiative in the world, the United Nations Global Compact determined ten principles for the companies that setting core values in the four different basic areas affect the human life. These principles ask the companies to substantially respect human rights, labor standards, the environment and anti- corruption. The principles 7-9 are related to environment area and call the companies; to be precautionary against the environmental challenges, undertaking initiatives to promote greater environmental responsibility and to be supportive in the development and diffusion of environment friendly technologies (Rasche & Kell, 2010). Exis-

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tence of the Global Compact acknowledges that environmental problems arose from the businesses' operations have rising importance and cannot be left local regulations and regulators or initiatives in the solution of the problems which affect the humanity. The businesses are the economic units to produce and sell their products to meet the needs of the society and to survive in future by earning profit. While the environmental problems, particularly pollution, may occur in the production phases, inefficient use of products by consumers or dispose of products may cause some other environmental problems too.

Especially to prevent side effects in product disposals, some businesses have begun to undertake more responsibility within the corporate sustainability and/or corporate social responsibility approaches. Besides estimating the cost of production, they started considering the cost of disposal before the sale of the products. This contemporary costing system, which is named life cycle costing (LCC) is used to achieve this objective. There, LCC includes disposal cost in the determination of total product costs. Life cycle costing considers both production costs and user costs. User costs are also known as transaction, maintenance, and disposal costs which they are closely involve in sustainability and waste management. Therefore, one can simply assert that LCC has a broader approach providing full cost in the calculation of the costs, compared to other conventional costing systems.

This study primarily focuses on revealing the fundamentals of the LCC and its relations with waste management, considering the sustainability perspective. In order to fulfill these objectives, the organization of the paper is as follows. The main characteristics and basic definitions relating to life cycle costing are presented in the background. After the background of LCC, the implementation of life cycle costing and the comparison of LCC with other conventional costing systems are discussed. In following, the links among life cycle costing, waste management, and sustainability will be analyzed. An overall review will be done in the conclusion.

BACKGROUND

The Basics of Life Cycle Costing

LCC varies from other traditional costing systems by considering the total cost of products throughout the life cycle of products. To enhance a clear comprehension of the LCC, explanation on the term of 'product life cycle' is vital. The graph below demonstrates the stages of the product life cycle. A product moves four major stages through its life cycle; introduction, growth, maturity, and decline.

Introduction is the first stage of the life cycle of product. Launching a new product incurs development costs, in addition to some other important period expenses, which incur during promotion and distribution. This situation results with low revenue and zero profit in the earliest phase of introduction stage. As time passes, sales start to increase and earn profit. Second stage is 'growth' and during the growth stage sales rise rapidly, and profits reach a peak. This stage is the most significant stage for the battle with competitors in order to gain consumers' acceptance and create loyal customers. Therefore, companies increase their promotion expenses. The third stage is 'maturity'. As it is seen on the figure above, sales curve peaks and it starts to decline parallel with profit curve. There is still a severe competition with the competitors and improvements and differences are required to promote the products. The last stage is 'decline'. During the decline stage, sales fall rapidly due to launch of the new products developed or updated with new technologies. As one product is declining, other products of a company are in the introduction, growth or maturity stages. Thus, when companies understand and ensure that

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