

# Bill of Services (BOS): A Managing Tool for Service Organizations

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## ABSTRACT

*Bill of Services (BOS) is a novel management tool designed to support service organizations in developing their services and planning resources to satisfy management's target service level. This paper presents a methodology for configuration of the BOS in a manner similar to configuration of the Bill of Materials (BOM) in a manufacturing organization. Definition of the BOS enables management to calculate the capacity of the resources needed to satisfy service demand and support the cost process of any service category in the organization. The BOS may also support management during the phase of negotiations with potential customers by testing various service alternatives. The BOS assists management in the day-to-day planning and control of activities, and facilitates a professional management infrastructure in service organizations. The paper presents a detailed example of a hotel BOS and elaborates the advantages of using this management tool.*

*Keywords: Bill of Services (BOS), Service Costing, Service Level, Service Organizations, Service Specifications*

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## INTRODUCTION

The service industry has grown to form the largest employment sector and share of gross domestic product for all major industrialized countries (Spohrer & Maglio, 2008).

Service science is the study of value co-creation and of entities seeking value co-creation outcomes from interactions among entities that co-create value. In order to achieve valuable service delivery, service organizations must develop supportive infrastructure so that the process of creating and delivering the service will be accomplished efficiently and effectively. Thus, the discipline of service design becomes a basic element in the development of services.

Organizations must develop services that will meet customers' expectations, requirements, and demands, to be delivered when needed, to the complete satisfaction of the customer. In order to preserve customer loyalty, organizations must consider the costs related to the service delivery process. Salvendy and Karwowski (2010) discuss the issue of service capacity while providing services. Excess capacity causes extra costs for workers that are not utilized effectively, while insufficient capacity can cause long customer waiting times. Thus, effective management of resource capacity in service delivery is a major issue that management must address.

DOI: 10.4018/ijiss.2015040102

The purpose of the paper is to design a management support tool for capacity and cost planning for service organizations. The paper attempts to adapt the Bill of Material (BOM) from the field of engineering design to service development and management. This cross-fertilization between disciplines is important for developing of service science solutions and for fostering service innovation. The integration of engineering and management is particularly relevant for the development of new services. The paper presents the Bill of Services (BOS), a tool for assisting service organizations in developing their services by identifying the resources needed to provide the service and the capacity of each resource. BOS is borrowed and adopted from the manufacturing field, enabling organizations to calculate quantities of the resource capacities needed in order to deliver the service elements emphasized by the service concept (Goldstein et al., 2002). Zeltin and Mandelbaum (2008) have developed a service operations management planning model to assist managers of service organizations in efficient allocation of their resources in order to meet customer demand. Their study is based on the authors' professional background and experience in engineering and manufacturing. They call for a multi-disciplinary approach in order to balance service quality, efficiency and profitability from the likely conflicting perspectives of customers, service providers, managers and society. Dietrich (2006) reveals that the lack of a standard method for representing resource requirements for business services and resource capabilities used for delivering business services makes it difficult to directly apply the analytic tools developed for manufacturing and supply chains to business services. For conventional goods, each unit of production is typically associated with a well-defined set of resource requirements: a BOM, processing time on a sequence of machines, and labor hours. In business services, the "unit of sales" is typically a contract describing business functions (e.g. hotel services) that will be performed by a provider for a client over a specified period

of time; a payment structure; and related obligations of the client and the provider. Exactly how the business functions will be provided, or what resources will be used and when they will be used, should be characterized by the service provider in order to satisfy customer demand on time and in an efficient manner (Dietrich, 2006). Sampson (2012) introduces the Process Chain Network (PCN) Analysis framework for service operations management (SOM). PCN analyzes the complexities of service operations in a systematic way, by depicting services as a specific type of resource/process configuration.

The Bill of Materials (BOM) is a well-known and widely-used entity in manufacturing. It is constructed during the engineering design process for any new product. The BOM provides a detailed data base of all components and operations needed to manufacture the product. Other data that may be included in the BOM are the type of machines to be used, quantities, the expected operation times and other pertinent information that enables proper capacity planning, ordering of materials, preparation of budgets, and implementation of schedules. The BOM is the cornerstone that supports the processes of purchasing and production planning and control. Essentially a structured part list, the BOM is usually employed in production management to separate the Master Production Schedule (MPS) into both gross and net component requirements. Guoli et al. (2003) proposed a tree-structure storage model to define the BOM. It uses two tables to record the parent components and the child component.

The BOM is a structured management mechanism that contains all the elements of the product. Product elements should support the product concept. When designing services based on the organization's strategy, the concept developed defines the service categories and characteristics and the service level for each service characteristic. Similar to the BOM, the BOS is a structured management tool that contains all the service elements. Based on the BOS, the necessary resource capacities can be planned and service costing can be performed

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