

Empirical taxonomy of services and service products in electronic commerce

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Abstract

In this study, we newly classify services and service products in EC into four categories: *Mass Services*, *Interactive Services*, *Supporting Services*, and *Professional Services*. Five selected variables reflecting the characteristics of the services, and two factorized dimensions, (1) proportion of on-line services, and (2) need of on-line interaction, are utilized for the classification. In addition, the relationships with customer purchase intentions in EC are investigated as a result of the classification. For this purpose, a customer survey was conducted on respondent groups who frequently purchase goods or services by EC and who also had advanced knowledge of the services and EC. Statistical methods of factor analysis, cluster analysis, and analysis of variance were utilized for analysis of the data.

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1. Introduction

Electronic Commerce (EC) acts as three different types of channels: distribution, transaction, and communication channels. However, the extent and efficiency of these applications depend largely on the EC infrastructure, relevant technologies, the characteristics of the product/services, and customer adoption. In particular, characteristics of product/services are critical due to the fact that EC is based on an electronic network for the exchange of digital information. Electronic channels require cooperation with off-line functions for the delivery of tangible goods, and have limitations in the delivery of feelings, kindness and other face-to-face interactions.

Therefore, it is necessary to consider the characteristics of product and services when evaluating the impact of EC.

There are several previous studies focusing on the characteristics and classification of products and services in EC. Generally, these studies are based on the concept that there are certain characteristics of products and services that are more suitable for transaction over the Internet. These different characteristics were found to have a significant impact on the customer's decision for the purchase of goods from a retail store or an Internet shopping mall [1,2]. However, there are currently few studies exclusively focusing on the unique characteristics of services or service products in EC.

Transactions in EC can be facilitated or restrained not only by the physical characteristics of products, but also by unique characteristics of services such as intangibility, inseparability, necessity of accessibili-

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ty, customization, and degree of interaction. Many service processes can be efficiently substituted by Internet applications due to the characteristics of 'intangibility'. However, 'inseparability' and 'necessity of accessibility' may hinder possible transactions in EC. Despite many services being provided on-line, these characteristics of services remain critical factors for EC. In addition, EC is rapidly expanding the area of applications in service industries such as entertainment, retailing, tourism, education, and consulting services. As a result, we need to focus on the services and the service industries in order to understand the impact of EC. The focus of our study is on the characteristics of services and service products in EC.

This paper is organized into five sections. The first section is the introduction. Section 2 provides a review of service characteristics and taxonomies, and a brief overview of previous research in EC. This section also identifies specific variables forming the basis for the classification scheme. Section 3 presents a description of the data and methods used in the analysis, and reports the classified categories identified by factor analysis and cluster analysis. In addition, this section presents the result of an investigation on the relationship between the classification and customer purchase intentions. Next, in Section 4, the characteristics of each classified group are presented on the results of the classification and the results of this research and contributions are discussed. Concluding remarks are provided in Section 5.

2. Background

2.1. *Necessity of taxonomies/typologies in EC*

For traditional services, many articles have presented taxonomies/typologies and provided generalized frameworks for analyzing service operations [3–7]. However, few previous studies have focused directly on services or service products in EC, despite the interest in the management of EC and its resulting impact. As a result, the taxonomies/typologies of services and service products reflecting unique characteristics of services and those of EC need to be developed.

In studies of service operations, many classifications for services or service processes have been developed in response to the difficulties of adapting common strategic insight in the management of service industries resulting from the wide variety of services and diverse nature of customer relations [8]. Authors in the service management field have proposed diverse typologies according to selected classifying dimensions, which, they argue, differentiate better between management issues and concerns in different types of services. Factors or dimensions frequently adopted for classification are tangibility or intangibility [8], interaction or customer contact [3–6,8,9], customization [4,5,8,9], availability of service outlets at single or multiple sites [8], and product/process [5,7]. Chase [3] classified services into pure services, mixed services, and quasi-manufacturing by the degree of interaction (from low contact to high contact), and suggested that the control measures used in a high contact organization will differ radically from low contact services. Also, Schmenner [4] proposed the service process matrix, based on three characteristics of service delivery systems, and provided different management challenges of each classified service. In this classification, services are categorized on two dimensions: the degree of labor intensity, and interaction and customization in services. The resulting matrix yielded a two-by-two matrix classification, which the authors labeled service factory, service shop, mass service and professional service. Silvestro et al. [5] classified services into mass services, service shops, and professional services.

Furthermore, for many studies of EC, tangibility and intangibility have been frequently adopted as a critical dimension for the characteristics of product/services [1,10–13]. In addition, the dimensions of cost and frequency of purchase [11,14], degree of differentiation [1,11], search or experience goods [13], size, outlay and frequency [1], and involvement of services or tangible products [15] have been adopted for classification. Some of the EC studies have conducted empirical investigations into the relationship between product characteristics and management issues. Poon and Joseph [13] classified products into four categories, explained by a two-by-two matrix, with the dimensions of tangible and intangible goods, and search and experience goods.

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