

Factors affecting customer needs of geographical accessibility in electronic commerce

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Abstract

Although, it is generally asserted that electronic commerce (EC) can overcome barriers of distance and lead to the dramatic expansion of markets relative to traditional brick and mortar companies, customer needs of geographical accessibility varies according to characteristics of product, service processes and other relevant factors. In this study, we developed six factors affecting customer needs of geographical accessibility in EC: degree of product tangibility, product standardization, on-line interaction and customization, off-line interaction and customization, price level, and firm reputation. Data for analyses were collected through customer surveys and statistically analyzed through exploratory factor analysis and multiple regression analysis.

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1. Introduction

The need for geographical accessibility between service provider and customer is a basic characteristic of traditional service industries resulting from the need for face-to-face contact in transactions. However, electronic commerce (EC) and new technologies have changed the concept of geographical accessibility by expanding the reach of market areas. More specifically, many service industries such as retailing, tourism, education, consulting services, and financial services have the opportunity to expand the reach of market areas from the EC environment due to the unique characteristics of ‘intangibility’ in services. In such transactions, many of the service processes can be substituted efficiently by EC applications, increasing customer convenience.

However, overcoming the barriers of distance from using EC will be largely dependent on the characteristics

of product, service processes, and other relevant factors such as price level and firm reputation. Closely related to these characteristics, customers can prefer services delivered from an accessible point arising from the need for face-to-face interactions, maintenance of service quality, and avoidance of perceived risk in delivery. Thereby focusing on customer needs of geographical accessibility in EC, this study aims to contribute to the understanding of the effects of EC on service industries.

Meeting customer needs of geographical accessibility is a critical factor in establishing EC operation strategies for customer contact and service delivery [1], customer support and logistics [6], and distribution channel strategies and network design [16]. In this study, we developed six factors affecting customer needs of geographical accessibility. In this study, a written survey was conducted on customer groups to measure their perceptions on the characteristics of product, service processes, and other independent factors such as price level and firm reputation as well as customer needs of geographical accessibility as a dependent variable. Collected data were analyzed with the application of statistical methods – exploratory factor analysis

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and multiple regression analysis. This paper is organized into five sections. The first section presents the introduction. The second section provides an overview of the representative characteristics of product, service processes and other relevant factors. In addition, the concept of customer needs of geographical accessibility is introduced in this section. In the third section, a description of the data and methods used in the analysis are presented, and the resulting factors identified by statistical analysis are reported. Also, the results of the analysis on the relationships between the selected independent factors and customer needs of geographical accessibility are explained in this section. In the fourth section, the overall results are summarized and implications of this research are discussed. And lastly, concluding remarks are provided in the fifth section.

2. Background and research propositions

In this section, the concept of customer needs of geographical accessibility is introduced and the characteristics of product, service processes, and other relevant factors such as price level and firm reputation, are reviewed concerning customer needs of geographical accessibility. From the review, critical factors that may affect customer needs of geographical accessibility are developed and research propositions are then proposed.

2.1. Customer needs of geographical accessibility in EC

The retail location and distribution network have been regarded as strategic decisions in targeting customers, market occupation, and creating a store portfolio in aggregate terms [3–5,7,13,24]. However, EC and new technologies have changed the geographic pattern and density of traditional branch networks as well as customer needs of geographical accessibility by overcoming barriers of geographical distance in transactions [1,16]. For example, the increasing use of automated teller machines (ATMs) and management activities have physically transformed networks, greatly reducing branch numbers, drastically changing the appearance of physical networks and the function of branches, as well as reorganizing the overall geographic pattern of outlets for financial services [5]. Electronic commerce provides a new environment that brings definitive changes in customer needs of geographical accessibility by extending the service area and expanding market scope.

However, due to the ‘inseparability’ of the service activity, which means that many services require the attendance of a direct recipient (people or things) in the service production process, many services call for personal interactions between the service provider and customer. Therefore, geographical accessibility should be still regarded as a critical variable affecting EC operations in a wide range of services [1,6,16], although its importance has been reduced with the advent of EC applications and

related technologies. In particular, customer perceptions to the needs of geographical accessibility in EC will be critical since it may be closely tied to customer purchasing behavior.

2.2. Independent factors

In this study, six independent factors are identified. The six factors include two factors reflecting representative characteristics of product, two factors of service processes, and two other relevant factors. ‘Degree of product tangibility’ and ‘product standardization’ are generally related to the characteristics of product, while ‘on-line interaction and customization’, ‘off-line interaction and customization’ are related to the characteristics of service processes. In addition, factors of ‘price level’ and ‘firm reputation’ reflect additional characteristics affecting customer needs of geographical accessibility in EC. The framework for the selected factors and their relationships are explained in Fig. 1.

2.2.1. Degree of product tangibility

Tangibility and intangibility are two major characteristics that are frequently used to describe a product or service [10,17,19–21], based on the characteristics of EC in which transactions are conducted on an electronic network. Tangible goods require the cooperation of off-line functions to be delivered directly to customers. In this context, intangible products are more suitable for EC applications [21].

Generally, tangibility and intangibility of a product or service is classified into two categories of a nominal scale, 0 or 1, representing tangible or intangible. However, the need to measure these factors as continuous variables in terms of the degree of tangibility or intangibility (from low to high tangibility or intangibility) is required to reflect the characteristics of volume, weight, fragility of a physical product, and degree of involvement in physical items in the transaction of services. For example, books and CDs can be sold over a broad market segment due to the characteristics of low tangibility along with small size and low fragility, although such products are tangible. On the other hand, a physical product of large volume or very fragile goods needs to be measured as highly tangible. Similarly, service products that are involved in physical things, such as equipment repair, need to be measured as more tangible than purely intangible services. In this study, these two product characteristics of the degree of tangibility and intangibility were included to the definition of ‘degree of product tangibility’, emphasizing the importance of the characteristics of ‘tangibility’ in the EC environment. Therefore, for example, product intangibility was replaced with low product tangibility in our study.

From these characteristics, a research question arises concerning customer needs of geographical accessibility as determined by the degree of ‘tangibility’ in EC.

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