

# Using System Dynamics to Analyze Customer Experience Design

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## ABSTRACT

*Today, customer experience design is an emerging research direction in the experience economy where good customer experiences can lead service providers to achieve their business goals. Customer expectation, another key point for designing service experiences, affects how customers really feel during service experience delivery, while service operation is another important factor must be taken into account. System dynamics, as an analytic tool, can provide designers with a different way of thinking by integrating these factors for customer experience design. Accordingly, this study not only models the process of customer experience design by using causal loop diagrams and stock and flow diagrams, but also analyzes how the feedback and time delay factors influence customer experience design based on the simulation results of system dynamics. According to the macro viewpoint of system dynamics, this paper analyzes these important factors within customer experience design.*

**Keywords:** *Customer Expectation, Experience Design, Experience Economy, System Dynamics, System Modeling*

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## 1. INTRODUCTION

Nowadays service providers attempt to achieve the high levels of customer satisfaction and customer loyalty by delivering reliable and unique services. Service providers need to design innovative services to create good experiences and attract more customers. Furthermore, the service industry can be regarded as a key role in the experience economy (Heskett et al., 1994). According to the Union of International Associations (<http://www.uia.be>), the gross

output value of the meeting service industry (such as meetings, incentives, conventions, and exhibitions) reached US\$1160 billion in 2007. The gross output value of service industries has become the major economy source in developed countries (e.g., US or Japan). Parasuraman et al. (1991) stated that service providers should realize customer needs in order to fulfill customers' wants and achieve their business goals within service experience delivery. Pine and Gilmore (1999) noted that redesigning their existing services to deliver memorable service experiences to customers is a new notion for service providers. While designing service experiences,

DOI: 10.4018/jssmet.2010070105

service providers should consider not only the physical aspect but also the customer psychological aspect. Previous research emphasized that it is important to realize what customers want, yet it is still difficult for service providers to meet customers' mental status. Hence, there has been a huge gap between customers' perception and expectation (Parasuraman et al., 1985; Parasuraman et al., 1988). How to provide customers with excellent services to match their expectations is a critical issue for service providers.

However, according to Zeithaml et al. (1993), customer expectation can be influenced by several factors (such as personal needs, situational factors, word of mouth, past experiences etc.). In other words, customer needs are tremendously changeable. Experience design which is indeed necessary to fulfill customers' diverse needs should be taken into account several related factors. The experience design process is so complex that it can be regarded as a dynamic and comprehensive system. Consequently, the research questions of this study are illustrated as follows.

1. How can the service providers effectively design customer experiences by taking into account critical factors in dynamic environments?
2. What systematical and constructive approaches can help service providers design customer experiences?

The purpose of this study is to apply the concept of system dynamics to build customer experience design models. According to these models, service providers can not only easily realize the potential problems but also clearly understand the relations of causal factors within experience design. In another word, this study attempts to analyze the causal process of experience design through the building blocks of systems thinking (such as causal loop diagram, and stock and flow diagram) rather than to use empirical research. This study also tries to utilize computer-based simulation tool to test the policy of experience design for service provid-

ers in order to select proper design strategies and operations.

This study is developed in several sections. We review the experience design and customer expectation literatures. Next, we examine the literature of system dynamics that represent the importance and link to customer experience design. Then, we demonstrate a reference model of experience model as a basic foundation to describe causal loop diagrams and stock and flow diagrams for customer experience design and therefore the simulation results will be analyzed in detail. Finally, we conclude a series of implications for managing customer experience design and opportunity for the further research.

## 2. THEORETICAL FOUNDATIONS

Customer experience design can be considered as a complex and dynamic process. This study will analyze the previous studies to identify the importance and key issues of customer experience design. Since system dynamics is an appropriate way to analyze the complex system, this study describes the concept and models of system dynamics approach in detail.

### 2.1 Literature Review

Pullman and Gross (2004) mentioned that experience design is a vital way to generate positive emotions of customers by delivering virtual or tangible services. McLellan (2000) stated that the goal of customer experience design is to create functional, purposeful, engaging, compelling, and memorable experiences for customers. Stuart and Tax (2004) noted that service providers should find out a critical approach to design a new service which can enable customers to achieve delight and loyalty. The most importance is that service providers should deliver excellent services for customers with pleasant and memorable experiences by designing good customer experiences. Consequently, customer experiences can be divided into several service segments, so experience design can be composed of a series of service design.

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