



New measurement scales for evaluating perceptions of the technology-mediated customer service experience

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Abstract

Service organizations are increasingly utilizing advanced information and communication technologies, such as the Internet, in hopes of improving the efficiency, cost-effectiveness, and/or quality of their customer-facing operations. More of the contact a customer has with the firm is likely to be with the back-office and, therefore, mediated by technology. While previous operations management research has been important for its contributions to our understanding of customer contact in *face-to-face* settings, considerably less work has been done to improve our understanding of customer contact in what we refer to as technology-mediated settings (e.g., via telephone, instant messaging (IM), or email). This paper builds upon the service operations management (SOM) literature on customer contact by theoretically defining and empirically developing new multi-item measurement scales specifically designed for assessing *technology-mediated* customer contact. Seminal works on customer contact theory and its empirical measurement are employed to provide a foundation for extending these concepts to technology-mediated contexts. We also draw upon other important frameworks, including the Service Profit Chain, the Theory of Planned Behavior, and the concept of media/information richness, in order to identify and define our constructs. We follow a rigorous empirical scale development process to create parsimonious sets of survey items that exhibit satisfactory levels of reliability and validity to be useful in advancing SOM empirical research in the emerging Internet-enabled back-office. © 2004 Elsevier B.V. All rights reserved.

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1. Introduction

Service organizations are increasingly utilizing advanced information and communication technologies, such as the Internet, in hopes of improving the efficiency, cost-effectiveness, and/or quality of

their customer-facing operations (Fitzsimmons and Fitzsimmons, 2004; Huete and Roth, 1988; Haynes and Thies, 1991; Hill et al., 2002; Oliveira et al., 2002; Roth, 2000; Boyer et al., 2002). More of the contact a customer has with the firm is likely to be with the back-office and mediated by technology (e.g., via telephone, instant messaging (IM), or email). Service organizations are finding that interacting with their customers via these new technologies can be a significant challenge (Zeithaml et al., 2002). While Internet-based customer support can potentially reduce costs on a per-transaction basis, customer

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satisfaction, as well as long-term customer loyalty, can be severely damaged by a bad on-line experience (Barnes et al., 2000; Heim and Sinha, 2001a). Therefore, the service operations management (SOM) issues related to managing customer contact in these technology-mediated environments warrant attention.

The concept of customer contact (Chase, 1978, 1981) has long been an integral element of SOM research. Customer contact is generally held to be a function of the interaction between a customer and a service provider (Kellogg and Chase, 1995). Initial work to empirically define the underlying dimensions of customer contact was performed using a hospital setting, an environment in which all contact between customers and employees occurred in-person and face-to-face (Kellogg and Chase, 1995; Soteriou and Chase, 1998). While extremely valuable, it is unclear whether the results of this research are equally applicable to contexts involving customer contact in technology-mediated (i.e., non-face-to-face) service delivery processes. We extend the abilities of SOM researchers to examine these environments by adapting Chase's initial ideas of customer contact to these new technology-mediated contexts, using customer perceptions.

This paper builds upon prior literature by theoretically defining the conceptual domains of inquiry, constructs, and operational measures specific to advancing SOM research in technology-mediated customer contact situations. This research context is particularly applicable for the emerging area of e-services. The unit of analysis in this research is the customer.

We follow a normative two-step process. First, we identify ten theory-based constructs covering three domains that comprise antecedents and consequences of technology-mediated customer contact from a customer's perspective. Second, because the constructs are latent (i.e. non-observed) variables, we apply a rigorous procedure for ensuring the psychometric adequacy of the resulting new multi-item measurement scales.

While Kellogg and Chase's (1995) seminal work on customer contact theory and the hypothesized Service Profit Chain (Heskett et al., 1994) helps motivate and structure our thinking in the SOM arena, we also draw upon the Theory of Planned Behavior (Ajzen, 1985, 1991), and incorporate the concept of

media/information richness (Daft and Lengel, 1984, 1986) in identifying and defining our constructs. Once the constructs are defined, we then follow a rigorous empirical scale development process in order to identify parsimonious sets of survey items that exhibit satisfactory levels of reliability and validity.

Section 2 presents a brief background of the research context and defines and illustrates the specific constructs for which new measurement scales are developed. The third section provides details on the preliminary scale development methodology and field study database. Section 4 describes and reports on confirmatory modeling results. In Section 5, we conclude with a discussion of the implications of our results and usage of the scales, review the limitations of our study, and offer some concluding thoughts.

2. Background

The advancement of communications and information technology is altering the ways that customers interface with service providers and, therefore, may influence customers' perceptions of the service experience (Boyer et al., 2002; Heim and Sinha, 2001b; Huete and Roth, 1988; Oliveira et al., 2002; Roth, 2000, 2001). This paper specifically focuses on a particular context that we call *technology-mediated customer contact*. This context is one of five possible modes (or distinct conceptual archetypes) of customer contact in relation to technology (see Fig. 1).

The first archetype, depicted in Fig. 1A, is called *technology-free customer contact*. The customer is in physical proximity of, and interacts with, a human service provider (hereafter, referred to as "service rep"). This archetype typifies traditional notions of face-to-face service encounters emphasized by Chase (1978). In technology-free customer contact, technology per se does not play a direct role in providing the service. Examples of technology-free customer contact include a psychiatrist's in-office consultation with a patient, a retail bank teller exchanging a customer's coins for paper currency, or an old-fashioned, general store clerk transacting the sale of merchandise with a cash drawer.

The second archetype is *technology assisted-customer contact*. The service rep employs technology as an aid to improve the face-to-face contact, but

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