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Perceived service quality in health services employing virtual channels

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Abstract

Health service over a virtual channel (e.g., mobile phone , web etc.) has emerged as a viable solution to serve the pressing healthcare needs through its high reach and low cost solution. According to Sousa & Voss (2006), “A virtual channel refers to a means of communication using advanced telecommunications, information, and multimedia technologies” . In this study, we focus on mobile health services (mHealth) , which is defined as an interactive medical service over a mobile platform (e.g., mobile phone , PDA) containing both virtual (e.g., e - referral, e - prescription etc.) and physical service components (e.g., treatment consultation with doctors) (see Exhibit 1). mHealth is seen as a transformative service for shifting the care paradigm from crisis intervention to promoting wellness, prevention, and self - management (Ostrom et al. 2010; Kaplan & Litewka 2008). Though mHealth is transforming healthcare delivery around the world; however, there are growing concerns about the perceived quality of such services due to lack of reliability of the system , knowledge and competence of the provider, privacy and security of information and above all, their effects on patient satisfaction . A review of the literature reveals that there is a paucity of service quality research in this domain and most of the studies are largely fragmented and anecdotal. Thus, this study fills these voids by aiming to conceptualise a perceived service quality model for health services over a virtual channel, especially in the context of mobile health services.

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Perceived Service Quality in Health Services Employing Virtual Channels

Introduction

Health service over a virtual channel (e.g., mobile phone, web etc.) has emerged as a viable solution to serve the pressing healthcare needs through its high reach and low cost solution. According to Sousa & Voss (2006), “A virtual channel refers to a means of communication using advanced telecommunications, information, and multimedia technologies”. In this study, we focus on *mobile health services (mHealth)*, which is defined as an interactive medical service over a mobile platform (e.g., mobile phone, PDA) containing both virtual (e.g., e-referral, e-prescription etc.) and physical service components (e.g., treatment consultation with doctors) (see Exhibit 1). mHealth is seen as a transformative service for shifting the care paradigm from crisis intervention to promoting wellness, prevention, and self-management (Ostrom et al. 2010; Kaplan & Litewka 2008). Though mHealth is transforming healthcare delivery around the world; however, there are growing concerns about the perceived quality of such services due to lack of reliability of the system, knowledge and competence of the provider, privacy and security of information and above all, their effects on patient satisfaction. A review of the literature reveals that there is a paucity of service quality research in this domain and most of the studies are largely fragmented and anecdotal. Thus, this study fills these voids by aiming to conceptualise a perceived service quality model for health services over a virtual channel, especially in the context of mobile health services.

Exhibit 1: mHealth service

	Virtual Service	Physical Service
Virtual channel (Mobile phone)	Automated health service such as, e-prescriptions or, e-referral e-DSS etc.	People delivered service such as, medical consultation with physicians over mobile phone.
Physical Channel	Not applicable	Face to face service in general (services in hospitals).

Conceptual Model

The extant research on service quality using virtual channels primarily focuses on front office dimension though service quality failures are often related to back office operations (i.e., Information Systems). As such, there is a research call to integrate both front office and back office dimensions to develop service quality models because customer perception is influenced by all moments of contact (e.g., Bitner et al. 2002; Sousa & Voss 2006; Fassnacht & Koesel 2006). Thus, this study proposes a consumer perceived service quality model for mobile health services incorporating *system quality* (quality of the service delivery system), *interaction quality* (quality of interaction between physicians and patients over mobile phone), *integration quality* (service consistency across automated voice and people delivered service) and *outcome quality* (service benefits) (see Figure 1). We propose that these are the critical dimensions of service quality in health services employing a virtual channel.

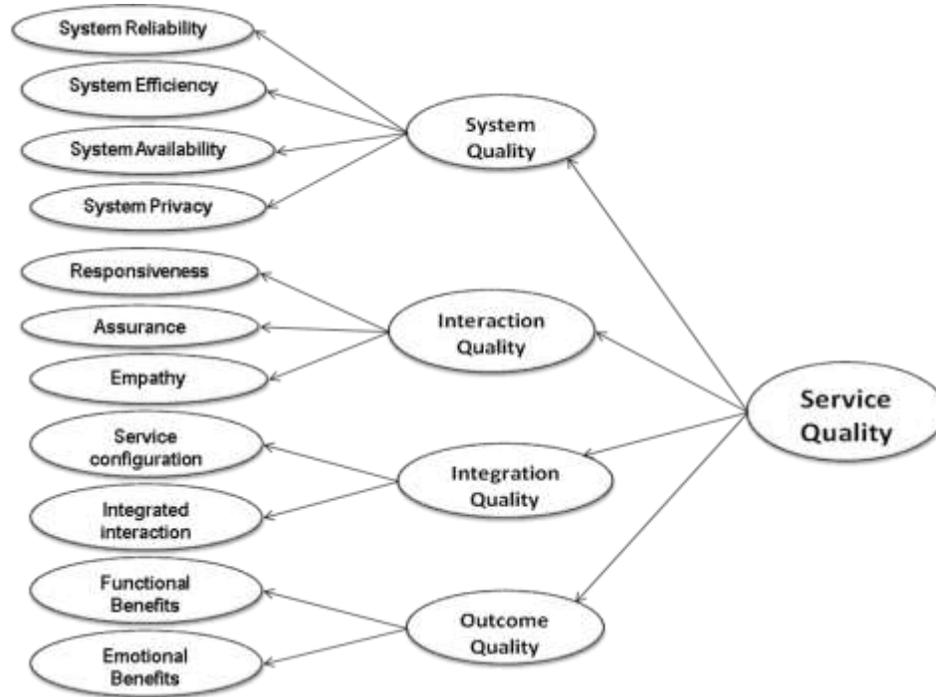


Figure 1: Service Quality Model for Health Services over Virtual Channel

System quality consists of system reliability, system efficiency, system availability and system privacy (Parasuraman et al. 2005; Sousa & Voss 2006). In this study, *system reliability* refers to the extent to which the mHealth system is dependable over time. *System availability* refers to the degree of correct technical functioning of the mHealth service system. *System efficiency* indicates the degree to which mHealth system can adapt to a variety of consumer needs and changing conditions. And finally, *system privacy* refers to the degree to which the mHealth system is safe and protects customers' information.

Interaction quality is based on *responsiveness*, *assurance* and *empathy* dimensions (Parasuraman et al. 1988; Brady & Cronin 2001; Sousa & Voss 2006). *Responsiveness* evaluates the willingness of the providers to help patients and provide prompt service over virtual channel. *Assurance* measures knowledge and courtesy of the provider to inspire trust and confidence. And finally, *empathy* assesses caring and individualized attention of the provider to its consumers.

Integration quality reflects service configuration and integrated interaction (Sousa & Voss 2006). *Service configuration* refers to the degree to which customers can chose alternative options for a given service (e.g., people delivered or automated voice) and accomplish preferred tasks through each available option. And finally, *integrated interaction* refers to the degree of consistency across interactions with available service options.

Outcome quality includes functional benefits and emotional benefits (Fassnacht & Koese 2006; Dagger et al. 2007). *Functional benefits* refer to the extent to which the mHealth serves its actual purpose. And *emotional benefits* refer to the extent to which using mHealth service arouses positive feelings.

Research Method

We specify that the conceptual model is comprised of higher-order, reflective constructs (Figure 1) in which indicators are manifestations of construct (Jarvis et al.2003). The extant research on service quality perception (Brady & Cronin 2001; Parasuraman et al. 2005; Fassnacht & Koesse 2006) and measurement model specifications (Edward & Bagozzi 2000; Jarvis et al. 2003; Wetzels et al. 2009) have always embraced such hierarchical view. For example, *system reliability, system availability, system efficiency and system privacy* are reflections of *system quality* and then *system quality* is a reflection of a portion of overall *service quality* (see Figure 1). Also, we adopt the perspective of reflective modelling (Jarvis et al. 2003) because all the indicators in our model share a common theme and dropping an indicator should not alter conceptual domain.

This study will apply PLS path modelling to estimate the third-order, reflective service quality model. One of the significant advantages of PLS path modelling is that it allows for more theoretical parsimony and less model complexity (MacKenzie et al. 2005). Under this mechanism, the manifest variables will be used repeatedly for the overall model (see Table 1). For example, the manifest variables will be used three times: for the first-order latent variable (e.g., system reliability), for the second-order latent variable (e.g., system quality) and for the third-order latent variable (service quality). According to Wetzels et al. (2009), “*This approach also allows us to derive the (indirect) effects of lower-order constructs, or dimensions, on outcomes of the higher-order construct.*”

Table 1: Proposed technique for estimating hierarchical service quality model using PLS path modelling

First Order model	Second order model	Third order model (Extension of second order model)
$y_i = \Lambda_y \cdot \eta_j + \varepsilon_i$ <p>y_i = manifest variables (e.g., items of system reliability) Λ_y = loadings of first order latent variable η_j = first order latent variable (e.g., System reliability) ε_i = measurement error</p>	$\eta_j = \Gamma \cdot \xi_k + \zeta_j$ <p>η_j = first order factors (e.g., system reliability) Γ = loadings of second order latent variable ξ_k = second order latent variable (e.g., System quality) ζ_j = error of first order factors</p>	$\eta_j = \beta \cdot \eta_j + \Gamma \cdot \xi_k + \zeta_j$ <p>$\beta \eta_j$ = second order latent variables (e.g., system quality, interaction quality, integration quality and outcome quality) except the highest order $\Gamma \xi_k$ = Third order latent variable (e.g., service quality) ζ_j = error of second order factors</p>

Conclusion

This study proposes a conceptual model for service quality in health services employing a virtual channel. Specifically, the study conceptualises a hierarchical, reflective service quality model for mHealth, which consists of four second order dimensions and eleven first order dimensions. To the best of our knowledge, no model has yet been developed to conceptualise service quality in this domain. Therefore, the proposed model and its validation techniques will act as a foundation for higher-order quality modelling in services research.

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