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Service Innovation in a Complex Service System: Public Transit Service Sustainability Business Cases

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Abstract

This paper seeks to assess and analyse service innovation in a complex service system, using a theoretical framework that comprises three key concepts: service innovation, complexity, and sustainability. Using two public transit cases, from Zurich and Singapore, this contribution describes the challenges associated with understanding service innovation in the complex public transit service system, according to its basis in social and environmental perspectives on sustainability. The findings affirm theoretical attempts to conceptualize service innovation and value co-creation in the service systems. By delineating the challenges of integrating sustainable thinking in complex service systems for service innovations and understanding the role of public transport services in an international context, this study makes an original contribution to research in services, sustainability, and complexity.

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1. Introduction

To achieve sustainability through innovations, public transit providers need to innovate the services they offer, by re-inventing the way value is created with their customers. In urban regions, rather than advancing the sole provision of public transit services, resolving sustainability challenges might require a perspective that acknowledges that service innovation is embedded in a complex environment, marked by societal and environmental issues. This paper

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assesses and analyses service innovation in a complex service system, noting that the concept of innovation is multifaceted. A service innovation might involve not only new services but also new technology, new networks, or new procedures. These innovations can be radical or incremental (Dewar & Dutton, 1986), whether based on utilitarian principles or experience. Service innovations also reflect a customer-focused, service-dominant (S-D) logic, such that value gets co-created with customers who are resource integrators (Baron & Harris, 2008). Rooted in innovation, a service system emerges that adapts and evolves through the exchange and application of resources. In turn, service systems can promote both excellence and innovation (Rubalcaba et al., 2010). Public transportation is a complex service system, based on a “value-co-production configuration of people, technology, other internal and external service systems, and shared information” (Spohrer et al., 2007, p. 2).

In this exploratory study, we illustrate three concepts—service innovation, complexity, and sustainability—using public transit cases in Zurich, Switzerland, and in Singapore. Our focus is describing the challenges associated with understanding service innovation in a complex, public transit service system, according to social and environmental perspectives on the efforts to achieve sustainability. That is, a complexity perspective, applied to service innovation in these urban regions, helps reveal the social and environmental perspectives that exist in these sustainability cases. In line with prior theoretical contributions, we find key elements of service innovation and value co-creation in service systems. This study also reveals the challenges associated with integrating sustainability thinking in complex service systems; with its focus on the role of public transport services in an international context, it can describe the challenges of understanding complexity and the role of public transport services from a service research perspective, on the basis of social and environmental perspectives.

In the next section, we build our theoretical framework, using concepts of service research, sustainability, and complexity from prior literature. Then we illustrate public–private partnerships with two case studies of regional public transport networks in Zurich and Singapore. After we reflect on the dialectic between theory and practice, where the framework meets the cases, we conclude this article with a summary of the main contributions and limitations of this study, as well as directions for further research.

2. Theoretical framework

2.1. Sustainability, innovation, and value creation

Innovation is essential to sustainability (Nidumolu et al., 2009). As we noted previously, innovation is a multifaceted concept, such that it might entail new services, new technology, new networks, and new procedures, as well as radical or incremental forms (Dewar & Dutton, 1986) and utilitarian principles or experience as bases, which might promote both excellence and innovation (Rubalcaba et al., 2010). Friedman (2008) also argues that innovation, not regulation, can best solve the environmental crisis.

According to an S-D logic, value is co-created with resource integrators, or customers (Baron & Harris, 2008), because these actors use their resources for the benefit of the other party. Both the service provider and the customer participate in value creation; only by integrating their resources can they co-create value (Gummesson, 2008; Vargo & Lusch, 2008). The integrated resources might be private (e.g., self, friends, family), market-based (from other entities, in economic exchanges), or public (collective access from communal and government sources) (Vargo & Lusch, 2011). Their integration also provides new opportunities for the creation of new resources. In this regard, Sundbo (2010, p. 281) notes that the complex character of services necessarily engages many different actors and trajectories, creating space for innovative combinations of societal values and priorities, as well as an arena for engaging different stakeholders and achieving resource integration. The resulting complex service systems (Rubalcaba et al., 2010) dynamically configure access to resources (e.g., people, organizations, technology, information), interact with other service systems, and mutually create and capture value (Spohrer et al., 2007). Service systems interact through value propositions (internal and external) that connect them to vast service networks.

In addition, in a new type of business model, sustainability represents a strategy for service development and service innovation, as well as a resource for enabling the creation of stakeholder value (Enquist et al., 2006). The “triple bottom line” agenda for governing institutions suggests such a convergence of business interests with wider societal concerns (Elkington, 1997). Because it engages local stakeholders, sustainability thinking also is an

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