A Conceptual Model of Service Innovation: The Case of Academic Libraries

Emergent Research Forum papers

Shea-Tinn Yeh
University of Colorado Denver
sheila.yeh@ucdenver.edu

Ronald Ramirez
University of Colorado Denver
ronald.ramirez@ucdenver.edu

Abstract

Responding to a 2015 MISQ call for research on service innovation, this study develops a conceptual model of service innovation in higher education academic libraries. Digital technologies have drastically altered the delivery of information services in the past decade, raising questions about critical resources, their interaction with digital technologies, and the value of new services and their measurement. Based on new product development (NPD) and new service development (NSD) processes and the service-dominant logic (SDL) perspective, this research-in-progress presents a conceptual model that theorizes interactions between critical resources and digital technologies in an iterative process for delivery of service innovation in academic libraries. The study also suggests future research paths to confirm, expand, and validate the new service innovation model.

Keywords

Innovation, service innovation, new product development, new service development, service-dominant logic, higher education, academic libraries.

Introduction

Over the last decade, there has been an increasing focus on service across socioeconomic sectors, coupled with the development of information and communication technologies (ICTs) (Barrett et al. 2015). This focus has been manifested by the proliferation of digital technologies, such as the Internet of things, mobile technology, and cloud computing, offering new forms of service innovation that are different from traditional service products. Barrett et al. (2015) calls for further research that reconsiders how service innovation may develop and progress in the new digital age.

Higher education institutions as social service providers, contribute to a knowledge-based economy that is essential for economic competitiveness (Bryson 2004, p. 120). The goal of higher education is teaching and research for the purpose of student success. With the advent of new digital technologies, higher education institutions have been challenged to redefine their student constituents and pedagogy. Academic libraries, at the heart of higher education institutions, have also been called upon to articulate their contributions to institutional mission and goals. In this digital age, Google Scholar, Wikipedia, and open Web are the first stop for information seeking, replacing the reference librarians who sit behind the desk waiting to answer in-person questions. eBooks and eJournals are downloaded from the Web replacing the physical items on library shelves reducing the need for faculty and students to visit their libraries. To maintain relevancy and to continue to add value to the institution, academic libraries have been encouraged to look to digital technology based service innovation as a strategic response (Yeh and Walter 2015). Unfortunately, there is a lack of service innovation research to guide this response, leaving a critical shortfall for academic libraries. What is a theoretical framework that helps motivate and encourage such research? As a first step to fill the knowledge gap, this research-in-progress paper proposes a conceptual model of service innovation for higher education libraries (Figure 1).

To do so, we first examine IT eras, service innovation, and their convergence in the context of academic libraries. Second, we examine new product development (NPD) and new service development (NSD) processes literature as well as literature on the service-dominant logic (SDL) perspective to develop a...
foundation for our proposed model. We then present a future research program, suggesting qualitative methods and secondary data analysis to confirm and expand the model. We also suggest quantitative measures for the empirical examination of the model. The contribution of this paper is two-fold: (1) the theoretical model contributes to the understanding of service innovation in a social service industry, and (2) the propositions will guide future research highlighting the role of digital technologies in service innovation for the creation of value. For practical implications, this research will assist leaders in higher education libraries to position service innovation to fulfill the mission of their parent institutions.

**A History of IT-Based Service Innovation in Academic Libraries**

Higher education is known to develop and adopt emerging technologies, with academic libraries adopting technologies and transforming them into innovative services for faculty and students. During the mainframe era in the 1960s, bibliographic database and classification system were developed with the indexing and retrieval capabilities. The first system was demonstrated in 1963 in the dawn of the information age (Bourne 2003). In the 1970s-1980s, with the improvement in computer storage, the development of minicomputers, and network capability, the first generation of integrated library system was born (Wallace and Pitkin 1991). This system included necessary hardware and software to automate the back of the house tasks and provided information retrieval at the front end to faculty and students. With the epoch of the Internet, microcomputers, and advent of digital technologies since the 1990s, libraries have shifted to electronic and digital content deliveries through Web services and activities (Lynch 2000). Today, libraries are integrating mobile and cloud-based platforms to create new services to remain relevant and to become more efficient given significant budget reductions. Service innovation is a priority for higher education libraries. The next section discusses the literature that derives the conceptual model and helps explain how libraries develop such new digital-based service innovations.

**New Product Development (NPD) Process**

Booz, Allen, and Hamilton (1982) divide new product development process into a seven-stage framework based on activities, known as the BAH model, which is sequential in structure deriving from studies of consumer goods and industrial products. Krishnan and Ulrich (2001) define new product development as “the transformation of a market opportunity into a product available for sale” and propose a five-stage framework. The focus of outcome here is physical goods and the development process is linear. However, to produce software goods, a non-linear process is often adopted in the form of a spiral, concurrent engineering, or overlapping model (Lou et al. 2013). The spiral model proposes a risk-driven approach in the development process by assessing code in an iterative loop to minimize risks (Boehm 1998). The concurrent engineering model stresses the concurrent nature of tasks and design activities, and the maximum sharing of information between the teams (Blackburn et al. 1996). Under the holistic or rugby approach, the teams are often overlapped with bottlenecks in a complex development process; but with trial-and-error practice the teams would manage to push themselves forward (Takeuchi and Nonaka 1984). NPD has been widely studied in the fields of marketing, operations management, and engineering with attention given to the development of physical goods (Krishnan and Ulrich 2001). When the goods are the center of an economic exchange, the value produced is based on a push philosophy where producers and consumers are two distinct entities (Vargo et al. 2008). The traditional NPD paradigm failed to recognize the unique characteristics inherited in service industries, such as the intangibility of a service product, the heterogeneity of customers’ demands, and the customers as participants in a service development process (Johnson et al. 2000).

**New Service Development (NSD) Process**

The models of NSD are all similar (Bowers 1989) and based on the BAH model (Johnson et al. 2000). For example, Bowers (1989) proposes a normative model that includes eight-stage activities. Although based on the BAH, Bowers specifically validates his research in the service industries and discovers that the more the producers seek to understand their environment, the greater the success rate of their new service innovation. Based on the service marketing literature and discussions with service managers, Sheuing and Johnson (1989) suggest a systematic model of 15 stages in sequence. The model’s particular value is in its illustration of internal and external activities and their interactions throughout the NSD process. Bullinger et al. (2003) captures services as an R&D object to systematize the development of services that profit from
NPD without neglecting the specific characteristics of services. Furthermore, Johnson et al. (2000) stresses the nonlinearity of the NSD process and the importance of “enablers,” such as teams, tools, and organizational culture in a service innovation process. However, Bullinger et al. (2003) notes the lack of discussion in the practical corroboration and ICT support in NSD models for the digital technologies era. Table 1 summaries the NPD and NSD modes referenced in this review.

**Service-Dominant Logic (SDL)**

Barras’ “reverse product cycle” model highlights the importance of ICT in new service development and service innovation (Barras 1986). The model suggests that the product cycle begins after the new technology has been adopted and the delivery of existing services is therefore improved; this in turn leads to service innovations. Barras’ traditional view regards ICTs as technological tools in facilitating service delivery processes (Barrett et al. 2015). Alternatively, a SDL, breaking from the product cycle, goods-oriented, and tangible output-based view, posits that skills, knowledge, and technology are instead sources for service innovation (Lusch and Vargo 2014). Unlike the push philosophy in NPD, SDL represents a pull form in which the producer and the consumer are united to apply both intangible (e.g. skills, knowledge) and tangible (e.g. ICTs) resources to co-create values for consumers (Srivastava and Shainesh 2015).

<table>
<thead>
<tr>
<th>Study</th>
<th>Process</th>
<th>Stage/Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booz, Allen, and Hamilton (1982)</td>
<td>NPD</td>
<td>7-stage: Strategy development, idea generation, screening &amp; evaluation business analysis, development, testing, communication</td>
</tr>
<tr>
<td>Krishnan and Ulrich (2001)</td>
<td>NPD</td>
<td>5-stage: Concept development, supply chain design, product design, testing, launch</td>
</tr>
<tr>
<td>Bowers (1989)</td>
<td>NSD</td>
<td>8-stage: Business strategy, new service strategy, idea generation, concept development, business analysis, service development, marketing, commercialization</td>
</tr>
<tr>
<td>Sheuing and Johnson (1989)</td>
<td>NSD</td>
<td>15-stage: New strategy, idea generation, idea screening, concept development, concept testing, business analysis, project authorization, service design, personnel training, service testing, marketing, launch, and post-launch review</td>
</tr>
<tr>
<td>Bullinger et al. (2003)</td>
<td>NSD</td>
<td>6-stage: Idea generation, analysis, concept development, implementation, marketing, review</td>
</tr>
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Table 1. NPD and NSD Processes

**Conceptual Model**

Based on the NSD process and SDL perspectives, we propose a conceptual model that identifies the critical resources for service innovation in academic libraries as skills, knowledge, space, alliances, and digital technologies. Librarians are trained professionals in the field of information services; their skills and knowledge are essential to the delivery of innovative information services. “Library as a space” can provide faculty and students the place to teach, learn, collaborate, and innovate. Library consortium has traditionally shared resources, personnel, technologies, and ideas to provide services and reduce cost. Digital technologies in the libraries are a tool (e.g. ebook reader) as well as a resource (e.g. ebooks) to satisfy the information needs.

These resources are fundamental for service innovation through a nonlinear six-stage process. The stages are idea generation, requirements analysis, concept development, implementation, launch, and post-launch review according to Bullinger et al. (2003). The service innovation would be enabled by the high professionalism attitude in librarians, the service-orientation culture within the library, collaborative learning from the library community, and the library users as co-creators. Academic libraries exist to fulfill
the “student success” mission; therefore, the innovation can be measured with student learning support, faculty research support, and library experience and visits. Figure 1 presents the conceptual model in illustration.

![Figure 1. Conceptual Model of Service Innovation in Academic Libraries](image)

**Future Research**

A future program of research will address the research questions of (1) What are the critical resources for service innovation in academic libraries? (2) How do digital technologies interact with these resources to produce service innovation in academic libraries? and (3) What are the value implications of new service innovations? Based on the conceptual model, we propose:

- **Proposition 1:** Librarians’ professionalism enables the integration of multiple resources within a service innovation process for student success.
- **Proposition 2:** A service-oriented culture enables the integration of multiple resources within a service innovation process for student success.
- **Proposition 3:** Collaborative learning from alliance libraries enables the integration of multiple resources within a service innovation process for student success.
- **Proposition 4:** Library users as co-creators enable the integration of multiple resources within a service innovation process for student success.
- **Proposition 5:** Interaction between multiple resources within a service innovation process contributes to student success.

In the first step to test and confirm the model, data from interviews and institutional assessment will be gathered from four academic libraries in doctoral granting universities known for their service innovations. Administrators including the dean, associate dean, and individual who initiated or led the innovation effort will be interviewed. In the next stage, we will conduct a survey of academic libraries across the nation to gather data concerning service innovations in higher education libraries. The sample will include libraries considered as leaders in service innovation as well as those that are late adopters of innovation created by others. By doing so, we will be able to model and examine service innovation across a wide range of libraries, to analyze data using econometric techniques, to control for variation in budgeting, technology capability, and institutional challenges.
Conclusion

As digital technologies render academic libraries increasingly irrelevant, service innovation is a strategic imperative. The results of this research help higher education leadership understand how to capitalize on digital technologies with other resources to create value through service innovation. This research also answers the MISQ call for research on service innovation and provides a starting point and guide for future research in a higher education context and in general, IT and innovation research. As highlighted in the MISQ call, research in service innovation is necessary as most existing research has focused primarily on the innovation of products. Our paper is a first step in this needed direction.

REFERENCES