

Management Insights

The Emergence of Service Science: Toward Systematic Service Innovations to Accelerate Co-Creation of Value

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The service sector now accounts for more jobs globally than either manufacturing or agriculture. Continued growth of the service sector requires service innovations that raise service quality and productivity. Even large manufacturing firms are getting more and more of their revenue from offering services. Yet creating service innovations reliably is difficult, particularly for knowledge-intensive business services. Creating service innovations often means integrating technology, business, social, and client innovations. Traditional focus on individual areas or disciplines—such as engineering, management, and social science—is now giving way to interdisciplinary studies and interdisciplinary skills. Specifically, service science is a new interdisciplinary area of study that aims to address the challenge of becoming more systematic about innovation in service. It has recently emerged in business schools and in engineering schools, in curricula and in research, and it promises to shape the landscape of service businesses and service workers now and in the future.

Experience, Service Operations Strategy, and Services as Destinations: Foundations and Exploratory Investigation

Chris Voss, Aleda V. Roth, Richard B. Chase

Service firms use the emerging “customer experience” paradigm strategically as a source of value creation—making an experiential service part of the core offering. Creating experiences should be approached systematically and leveraged as an integral part of the service operations strategy. This calls for a new mindset for operations strategy—one of *choreographing the service delivery system* to create and deliver a realized total experience for the customer. This mindset leads to reframing traditional strategy choices in four areas: “stageware” (bricks and mortar), “orgware” (management systems), “customerware” (customer touchpoints), and “linkware” (integration systems). Experiential services are designed to evoke emotional responses and engage customers; therefore,

in its new role, operations strategy must incorporate a strong behavioral science component. The use of experience to add value can range from limited use in experience-based marketing through experience enhanced products, portfolios of experiences to a new business model—services as destinations. As the depth of use of experience increases, so must the degree of business cross-functional integration. An analysis of 28 case studies shows that the alignment between the level of integration and experience use leads to exceptional performance, whereas misalignment causes either excess investment costs or failure to realize economic benefits of integration.

New Service Development Competence and Performance: An Empirical Investigation in Retail Banking

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New service development (NSD) success results from building a competence in the management of service development resources and routines. NSD competence is represented by a system of four interrelated and complementary dimensions: (1) use of systematic and formalized NSD processes, (2) deep understanding of customer requirements and the competitive environment (i.e., market acuity), (3) formal strategy on new offerings, and (4) use of information technology to coordinate flows and activities. Formalized processes play a lesser role in the success of NSD compared with the other three dimensions. Instead, market acuity—which captures the firm’s ability to see the competitive environment clearly and to anticipate and respond to customers’ evolving needs and wants—is the most important NSD competence indicator. NSD competence has a positive effect on NSD performance, and it is also significantly related to business-level performance. Complementary benefits arise from the adoption of a more holistic approach to the management of NSD at the program level.

A Specialized Inventory Problem in Banks: Optimizing Retail Sweeps

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Operations management literature is replete with models for inventory management of hard goods in a manufacturing context. Imagine a situation where

raw material could be converted to widgets and then back again to raw material at little or no cost. What would be the inventory modeling implications in such a situation of fungible goods? Clearly, the idea of postponement and delayed differentiation would take a whole new meaning, since one would have money tied up in a finished product that is no longer selling. Such a situation is possible when the inventory is in the form of cash. Modeling for optimizing retail sweeps in banks can help reduce exposure to reserve requirements.

To Pool or Not to Pool in Call Centers

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In practical service environments, the general perception seems to exist that pooling capacities, such as of call center agents in call centers, is always beneficial for capacity reduction and performance improvement. In the case of just one type of service, this intuition appears to be correct. With different services, in contrast, it appears that the effect of pooling, also for realistic call center sizes, might even be negative due to the mixing of different service characteristics. An awareness of this possible negative effect of pooling should be present in call center management. This awareness can be used to propose overflow scenarios that perform superior to both strictly pooled and unpooled situations.

Optimizing the Staffing and Routing of Small-Size Hierarchical Call Centers

Philippe Chevalier, Jean-Christophe Van den Schrieck

In call centers such as specialized helpdesks or hotlines for retailers that are typically found in B2B environments, demand rates are typically quite low, but there are many demand types. The literature has shown that the scale economies linked to the pooling of demands are quite important in such environments. Solutions proposed in the literature for large call centers are not adapted to this context for two reasons. On the one hand, the fluid approximation is not adequate for low demand rates. On the other hand, these solutions do not consider the integrality constraint on the number of operators, particularly relevant for small operator pools. The authors propose a methodology to find a least costly staffing and routing policy subject to both service quality and integrality constraints. They also evaluate the benefits obtained by their method.

Assessing Markups, Service Quality, and Product Attributes in Music CDs' Internet Retailing

Elliot Rabinovich, Arnold Maltz, Rajiv Sinha

The advent of music downloads has heightened competition among Internet CD sellers, reinforcing the

need for coordinating operations and marketing to optimize profits. Similar pressures apply to all Internet retailers, although a number of them may not be selling easily digitized products. Services bundled with the products retailers sell can allow these firms to enjoy differential markups even if they share product sources with competitors, and online retailers that look for ways to sell unique items can obtain additional markups. The lesson for retailers is that service differentiation may yield favorable results, even when buyers can search for bargains very efficiently. Although sellers that are service leaders will not be the first choice for bargain hunters, these sellers will obtain increased markups from buyers who seek great service quality and are likely to develop site loyalty. This effect is amplified for retailers competing in music niches, which can enjoy higher retail markups, along with the financial benefits derived from the service quality experiences offered to customers.

Assessment of Patient Classification in Appointment System Design

Tugba Cayirli, Emre Veral, Harry Rosen

In ambulatory care settings, such as group practices, radiology centers, and hospital clinics, appointment systems need to be carefully designed to suit the unique characteristics of the clinic environment. If there are certain classes of patients known to be distinct in attributes, such as consultation time characteristics, then this raises the issue of whether the extra information can be used to refine the appointment system by adjusting appointment intervals and/or sequencing patients at the time of booking. The authors introduce appointment systems that differentiate "new" and "return" patients with results relevant to any classification scheme based on consultation time length. The results indicate superior performance in terms of patients' waiting times, doctor's idle time, and overtime without any trade-offs. Practical guidelines are developed for managers in choosing the best appointment rule and the sequencing approach for their specific clinic in light of their patient population characteristics and the respective value placed on a patient's time and doctor's time.

Service Coproduction with Information Stickiness and Incomplete Contracts: Implications for Consulting Services Design

Mei Xue, Joy M. Field

For knowledge-intensive consulting services, the process design involves determining the workload allocation between the consultant and client. However, key characteristics of consulting services, including the coproduction nature of the process, information stickiness, and contract incompleteness, each contribute to

a loss of process efficiency. Specifically, there is a systematic underinvestment of effort or resources by the client, thereby prolonging the implementation stage of the consulting service and reducing overall process efficiency. This points to the benefits of increased client efforts to absorb and process the knowledge transferred from the consultant. In addition, the party who is more productive in processing and transferring information—which could be either the consultant or client—should have the residual right to specify the workload allocation after the final service need emerges to achieve higher process efficiency. Finally, depending on which party has the right to specify the workload allocation and the relationships among the consultant/client information transfer and processing costs, different pricing schemes can be put in place to increase process efficiency. Overall, a better understanding of the causes of unproductive or inefficient consulting processes suggests directions for achieving greater efficiency from operational processes, the design of contracts, and pricing schedules.

System Dynamics as a Structural Theory in Operations Management

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Dynamic complexity (in terms of feedback loops, accumulation processes, and delays) is a widespread phenomenon in operations management (OM). However, conventional OM approaches frequently ignore it or do not consider it appropriately. The system dynamics approach is well suited for addressing many OM issues, when they exhibit forms of dynamic complexity. As a structural theory, system dynamics can be used to explain, analyze, and understand

the effects of feedback loops, accumulation processes, and delays in OM. Implications of dynamic complexity are the necessary reframing of some OM issues based on system dynamics and the extension of empirical studies by dynamic modeling and simulation.

From Mass Production to Mass Customization: Hindrance Factors, Structural Inertia, and Transition Hazard

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The decision to embrace mass customization within an existing mass production environment presents manufacturing firms with a number of significant challenges. Simultaneous changes with respect to product architectures, manufacturing technologies, and supply network configurations can be expected. Whether or not these changes can be enacted will depend, to a large extent, on how effective manufacturing firms are in mitigating the five hindrance factors as follows: (a) the marketing approach towards product specification, (b) the accounting procedures for computing direct product costs, (c) the priorities of the engineering design culture, (d) the investments in manufacturing assets, and (e) established structural constraints within a firm's value chain. These five hindrance factors, as well as explanations as to how and why they impede a mass-production-to-mass customization transition, were identified and derived based on a longitudinal case study of a manufacturing facility as it seeks to transition from mass production to mass customization and were subsequently validated against the antecedents and tenets of structural inertia theory.