

Value and systems perspectives in combining human and automated services

Invited Commentary: “Seven Challenges to Combining Human and Automated Service”

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The article “Seven Challenges to Combining Human and Automated Service” (Messinger, Li, Stroulia, Galletta, Ge, & Choi, 2009) in the last issue of *CJAS* is an admirable effort to build on the knowledge required for service organizations in the modern economy. Taking a value and systems perspective, my purpose for the current commentary is to offer some reflections on each of the seven challenges, to acknowledge strengths in organization and content of this article, and also to suggest additional related issues to help service organizations better meet the seven challenges noted in this article.

To put things in context, it is useful to begin by considering the definition of “value.” The traditional understanding of value is that of exchange value that underpins the traditional customer-producer relationships, where each party exchanges one kind of value for another (Bagozzi, 1975). Today, the discussion of value has veered away from this understanding to the concept of value-in-use (Schneider & Bowen, 1995; Vargo & Lusch, 2004, 2008), evaluated by the customer rather than the currency for the transfer of ownership of a particular good. As Marx described it, value refers to “value only in use, and is realized only in the process of consumption” (Marx, 2001, p. 88). Based on such an understanding, all value is therefore co-created (Vargo & Lusch, 2004, 2008) and co-creation is the realization of the firm’s value proposition, be that a good (e.g., a car) or an activity (e.g., repair). This realization of value by the customer means that the value derived by the customer is the combinational outcome of the firm’s proposition (car, repair, etc.) and the customer’s realization of it (consumption) with both parties expending their own resources to achieve the outcomes at a time and place (context) appropriate from the customer’s point of view (Ballantyne & Varey, 2006). Hence, a firm’s product offerings, be they goods or activities, are merely value unrealized, that is, a “store of potential value” (Ballantyne & Varey, p. 344), until the customer realizes it through co-creation and gains the benefit. This can be thought of as customer experience (Payne, Storbacka, & Pennie Frow, 2008) but it must be understood

that co-creation is situated at the point of consumption and customer experience is an emergent outcome of it. This is in contrast to co-production, where the customers assist the firm in achieving a better value proposition (e.g., users helping Toyota or Apple design a better car or computer).

Co-Production and Value Co-creation in Hybrid Service

Turning to the first two challenges, an important distinction should be acknowledged: customer resources can be employed in both co-creation and co-production. Co-creation is always served by the self, since the customer has to sleep and wake up refreshed to enjoy the experience of a hotel room and determine when to make a phone call and then talk on the phone. In co-production of activities, the term *self service*, as the paper has highlighted, is often used. However, in this age of connectivity, co-production is becoming more sophisticated with crowd-sourcing and the harvesting of user generated content—all of which are starting to impact on how firms design their value offerings in partnership with their customers.

In particular, relating to Challenge 1 (identifying the key issues of managing a hybrid service system), the authors' proposed conceptual framework is explicitly designed to address the fact that co-creation of value-in-use involves employment of customer resources (self-service) together with employee and automated resources. It would be desirable, however, for the discussion to have greater recognition of the potential role of customers in co-production, especially recognizing that the efforts of third parties (other consumers and institutions) can be harnessed as part of the system.

Relating to Challenge 2 (determine the value offer), it is relevant to recognize that customers themselves can be involved in determining the value offer (not just in realizing a predetermined value offer through co-creation). Furthermore, when human and automated

technologies combine, it is important to know where automated technology has an impact on value, whether it is on co-production or co-creation. Hence, the firm has to understand what resources are contributed by both customers and the firm in order to achieve the benefits realized within the customer experience. Only by understanding the resources contributed by both parties in value co-creation can the resources contributed by the automated technology be assessed to be appropriate substitutes to achieve the best outcomes for customers in the target market, at the lowest costs. The substitutability of resources contributed by the firm, by the customer, and by automation must therefore be evaluated not merely from the cost perspectives, but with the possibility that it could also lead to better outcomes, resulting in the firm being able to either increase price or demand for the service (Ng, 2007).

Context of Use and Customer Variety on the Design of Human-Automated Service Systems

Challenge 3 describes the planning and implementation of human and automated systems. Traditionally, when designing goods or equipment, the context of use by the customer does not change the delivery system immediately. For example, how a customer uses a TV or a car does not immediately change the design and manufacture of the TV or car (although the past patterns of use may serve as inputs and feedback for future design). In service activities, customer “use” of an activity in a context has a direct impact on the design and delivery of the activity, which makes it a challenge for the firm to decide how much variety to tolerate in its initial design and resource inputs. For example, a customer withdrawing \$250 from an ATM machine preferring to have five \$10 bills and ten \$20 bills (instead of some other combination) is a contextual use variety that the machine may not be able to tolerate. But, even if the customer does not receive bills in the desired increments, he knows that the ATM could not deliver it and is not necessarily unhappy. However,

withdrawing \$250 from a bank teller on the same occasion will result in either that variety being absorbed (i.e., the customer request is accommodated, which would therefore have impact on resources) or attenuated (the customer request is not accommodated and he is therefore unhappy). Equally important, related considerations involve anticipating the contexts for and times of peak and base loads on a service system. During peak loads, for example, it may be desirable to curb the offerings of customer variety (similar to “no left turns” on main traffic arteries during designated times of high traffic flow).

Concerning Challenge 3 (plan and implement), Messinger et al. (2009) implicitly consider such issues, but I think it desirable to develop these issues a bit more explicitly. When planning and implementing a service system, it is crucial for a firm to understand the complex trade-offs between automated technologies and human activity in terms of dynamic usage patterns, contexts of use of a system, and customer expectations (Ng & Ding, 2009).

Challenge 5 (suitably align communications) is also a domain where the need to understand context of use is manifest, and Messinger et al. (2009) acknowledge this. Furthermore, while aligning communications is crucial, I would argue that the firm also needs to align its design, delivery, and evaluative processes with those of the customer. Such alignment must also be carried through in terms of measurement (Challenge 6), where there is a need to evaluate and find measures for customer systems as well as the alignments between them (Ng, 2010).

Gaps in Customer System and Firm-Customer Alignments in Value Co-creation

When a firm decides on a value proposition, it implicitly assumes the target market’s resources (abilities, skills, etc.) necessary to realize its proposition. That implicit assumption carries through to design, implementation, and management. However, at the point of delivery, contextual aspects of use may thwart the customer’s abilities to achieve the

outcomes. This is particularly important in business-to-business markets, where customer systems to consume the provider's offering may not be aligned (Ng, Nudurupati, & Tasker, 2009). This has also been suggested by Woodruff and Flint (2006) when they proposed a new bidirectionality for mutual satisfaction. Gummesson (2002) also suggested the term *balanced centrality* to illustrate this concept. Given that a hybrid service would require more skilled resources to achieve outcomes (ability to use an iPhone for example), the infusion of automated technology depends on the firm and customers having the resources to both deliver and consume the service as well as aligning delivery and consumption within the experience to achieve a high level of satisfaction.

Therefore, concerning Challenge 4 (manage service delivery), it would be desirable to even further extend the gap model described in this section to include the gaps in the customer system, or the alignments between the firm and the customer that would impede satisfactory outcomes. In doing so, the role of the customer in the firm's processes and systems, and the role of the firm in the customer's processes and systems would be more cohesive and therefore be better understood.

Applying Systems Thinking and Interactions in Hybrid Systems.

Challenge 7 (coordinate interdisciplinary activities) highlights a crucial aspect of managing service systems. The industrial era of dividing tasks and functions between disciplines has worked best when there was an obvious value chain yielding concrete outcomes such as cars or ovens. Within these tasks and functions, a modular "click and play" approach was appropriate as the interactions between the functions (and disciplines) were minimal. One could therefore strive to make the system lean and efficient to produce six-sigma (and other desirable) outcomes. For service systems where processes, people, and automated technologies oftentimes function with the customer situated within the system

(e.g., airports, healthcare), the system becomes much more open and functional departments and disciplines have to account not merely for the tasks they need to perform, as Table 11 Messinger et al. (2009) article highlights, but also for the interactions between them (Ng, Maull, & Yip, 2009). The outcome of these interactions, from a systems perspective (cf. Beer, 1984; Checkland, 1981), result in the emergent property of a customer experience (cf. Spohrer & Maglio, 2008). Thus, the firm's task to manage hybrid systems is not only to understand the nature of work and its responsibility at a functional disciplinary level as the paper has highlighted, but also to understand the nature of the interactions and links between them.

Such linkages and interactions between functional areas and between disciplines are crucial to the success of systems that are able to consistently deliver customer satisfaction. For example, in a healthcare system, "handoffs" of patients between departments occur frequently, and these handoffs should be seamless to and relatively effortless for the patient. Furthermore, information (and possibly materials, such as samples) must be passed effectively between these departments. There is also a need for the different disciplines (and departments) to understand each other's requirements, processes, and perspectives in order to achieve balance across the different disciplines when setting strategy, designing, and implementing the service system, engaging in ongoing management, and measuring outcomes. Indeed, developing a culture of interdisciplinarity is a "glue" that helps hold together a service system and make it work. Recognizing this, the disciplines themselves should work towards developing new collective knowledge in order to promote better customer experiences. While Table 11 takes an admirable step in documenting the disciplinary activities required for hybrid services, further work would make an invaluable contribution if it could more fully develop the linkages among the different disciplines and

among the different functional areas so as to address directly the challenge of “inter”-disciplinarity (Ng, Maull, & Smith, 2010).

Conclusion

Overall, while I agree that there is a need to address the seven challenges discussed by Messinger et al. (2009), I also think that the authors’ objectives can be further advanced by attending to several issues. Firstly, it is desirable to distinguish between co-production and value co-creation in hybrid service, and to recognize that many consumers working together can engage in co-production and that the value offer itself might be determined in part by the consumer. Secondly, the design of a hybrid service system (as well as communications and measurement of outcomes) should recognize usage contexts, dynamic usage patterns, (including desired customer variety), and customer expectations. Thirdly, it would be desirable to even further extend the gap model (described in Challenge 4) to include the gaps in the customer system, and the alignments between the firm and the customer that would impede satisfactory outcomes. Fourthly, I agree that there is a the need to coordinate interdisciplinary activities. I accordingly advocate a systems approach to achieve interdisciplinary coordination, both concerning day-to-day “handoff” of materials, information, and customers as well as coordination of strategic planning among different departments and disciplines.

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