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The human dimension of modular care provision: Opportunities for personalization and customization

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ABSTRACT

Various behavioral issues are at stake in the health care sector, for example, the current strong plea for more demand-based care provision as opposed to traditional supply-driven approaches. Healthcare organizations are increasingly in need of systems and approaches that allow them to be more responsive to the needs and desires of their clients. To cope with heterogeneous and multiple demands, the application of modularity is increasingly proposed in care and services. In this paper the purpose is to study how interpersonal behavior responsive to client needs and values can be accommodated in modular care provision. Drawing on relevant literature from various service-related disciplines, we develop insight into how customization and personalization are simultaneously practiced by means of case research in the context of long-term care for elder people.

Our empirics indicate that in care for elder people, personalization complements customization in adapting supply to demand. Customization is used to better match the needs of an individual customer in terms of the content of the service. Personalization is also used for this purpose, however, by adapting the way in which the service is provided. Moreover, the practice of personalization effectuates customization over time. The paper shows the importance of human behavior in the application of modularity in long term care for elder people. Approaching the issue of adaptation through the lens of modularity offers care providers insight into how customization and personalization are related. These insights can be used for the design of care delivery systems that enable comprehensive adaptation of supply to heterogeneous customer demands over time.

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1. Introduction

Modularity enables service organizations to provide customization efficiently and be responsive towards needs of individual service consumers (e.g., Meyer and DeTore, 2001; Miozzo and Grimshaw, 2005; Pekkarinen and Ulkuniemi, 2008; Sundbo, 1997). In health care, first steps towards the application of modularity have been made (Bohmer, 2005; Chorpita et al., 2005; De Blok et al., 2010; Langlois and Savage, 2001; Meyer et al., 2007), however, as in other service settings, mainly from a rather technical point of view, thereby largely reflecting its manufacturing origin. However, the success of any operations management (OM) concept, tool or technique, and the accuracy of its theories, relies heavily on our understanding of human behavior in the context in which it is applied (Bendoly et al., 2006). In health service contexts, where services are created in close interaction between service provider and health care customer, the potential influence of human and behavioral aspects on the application of an OM concept is large. Realistic human behavior, therefore, needs to be incorporated into the concept of modularity to gain insight into its actual potential. Thus, rather than developing another technical application, our purpose is to study how interpersonal behavior responsive to client needs and values can be accommodated in modular care provision.

More specifically, the provision of care involves extensive and intimate customer contact (Jaakkola and Halinen, 2006; Verma, 2000). As the service is mainly targeted at the receiver's body or mind, healthcare services are prime examples of customers working together with the provider in co-creating value (Lanseng and Andreassen, 2007; Vargo and Lusch, 2004). Value co-creation, thus, implies that customization of the service package offered can be highly influenced by human or behavioral aspects. Besides the adaptation of technical contents of care provision, a personal touch

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to and on-going relationships in care delivery are required (Bosman et al., 2008; Sofaer and Firminger, 2005; Ware et al., 2003). This is especially important when care clients are in a relatively frail position which might cause a lack of trust and high degree of perceived uncertainty during care delivery (Moliner, 2009).

To integrate modularity research focusing on customization of the service offering with behavioral concepts that incorporate human interaction, we turn to the concept of personalization. This concept focuses on how service professionals interact with customers and tune interpersonal interaction to customer needs. Research and insights concerning modularity and customization have been largely developed independently from research concerning personalization aspects. To incorporate realistic human behavior as one critical component into the concept of modularity, thereby integrating customization and personalization in care and service delivery, these two literature streams should be brought together and knowledge should be created on the actual contribution of personalization in the adaptation and delivery of customized care offerings. This paper therefore addresses the following research question: *How does personalization contribute to the provision of customized modular long-term care?* We first provide an overview of existing knowledge on customization and personalization in relation to modularity and provide an overview of how both concepts work towards tuning supply to demand. To further examine and refine this overview in the context of care, we conducted case research in organizations that provide care and services to elder people living independently. These organizations face high diversity in demand and high intensity of customer interaction. The case study findings are first described and then discussed from a customization and personalization perspective. From our research, it follows that personalization serves more goals than have been identified in literature so far; it complements as well as effectuates customization. Conclusions, including consideration of the implications of the research, complete the paper.

2. Theory

Customization is defined as the configuration of products and services that meet customers' individual needs (Pine, 1993). Customization research has been developed in the fields of product design and operations management to develop ways in which goods and services can be adapted to individual standards. Modularity has been widely identified as a means to bring about cost-effective customization (e.g., Duray et al., 2000; Hsuan and Skjøtt-Larsen, 2004; Pine, 1993). Personalization is defined as the adaptation of employee interpersonal behavior such that it suits a particular customer's preferences (Gwinner et al., 2005). Personalization stems mainly from service marketing and management and has been developed in these fields over the years in order to individualize and fine tune the way in which services are delivered. Both concepts have found their way into the health care sector in order to accommodate individual demands. In the next sections, we will introduce the concepts of customization and personalization, including their what's, why's and how's. We will discuss their application in health care and argue why the concepts should be integrated in order to achieve care delivery that is tuned to individual client's and patient's needs.

2.1. Modularity to achieve customization

Modularization, in general, is an approach to organize complexity in an efficient manner (Baldwin and Clark, 1997) and from a systems point of view refers to the degree to which a system's components can be separated and recombined (Schilling, 2000). In the field of operations management, modularity is understood mainly from the perspective of component combinability; different product configurations can be obtained by mixing and matching components taken from a given set by means of standardized interfaces (Salvador, 2007).

To achieve customization and address heterogeneous customer demands, organizations develop largely standardized components and modules that can be employed efficiently in a variety of configurations (Salvador, 2007). To the extent that different customers require different outputs, product variants may differ in one or more modules, the rest of the product being unaltered. As such, not all components need to be subject to change to address market fragmentation (Salvador, 2007).

To achieve customization, modularity has been applied both in goods (e.g., Hsuan and Skjøtt-Larsen, 2004; Muffato, 1999; Starr, 1965) and in services (e.g., Meyer and DeTore, 2001; Pekkarinen and Ulkuniemi, 2008). One characteristic that distinguishes services from goods, and thereby influences the application of modularity, is the role of human behavior (Meyer and DeTore, 2001; Voss and Hsuan, 2009). Services come into existence in close interaction between producers and customers (e.g., Edvardsson et al., 2005; Sampson and Froehle, 2006) and during these encounters service employees perform activities that modify the service offering in accordance with customers' needs and requirements (e.g., Gwinner et al., 2005). In modular services, thus, customization is often achieved by service workers who put together and configure the necessary components for each client (Meyer and DeTore, 2001; Voss and Hsuan, 2009).

In literature on service modularity, two ways for achieving customization of the service package offered can be recognized. First, variety can be obtained by *combining menu components*, which cannot be changed, from a predetermined set of standard components. Here, modularity is applied by means of a menu of options from which the service worker arranges or combines appropriate modules according to customer specification (Sundbo, 1994, Voss and Hsuan, 2009). Second, the customer can be presented with a prototype that can be tailored to suit an individual's needs and requirements (Tiwana and Ramesh, 2002). Variety can be obtained by *changing dimensions of the service prototype*. Components in the standard design can be modified or unique modules can be created and added to the prototype to provide a service package that meets customer specification (Voss and Hsuan, 2009).

In health care, first steps towards the application of modularity have been made (Bohmer, 2005; Chorpita et al., 2005; De Blok et al., 2010; Langlois and Savage, 2001; Meyer et al., 2007). This fits the trend that can be seen in most Western health care systems where care clients and patients are given a more central position. Care providers are encouraged to be responsive to the needs of their clients and take client demand as the basis for care provision (e.g., Billings and Leichsenring, 2005). In this respect, the application of modularity in a care organization's products and processes might provide a way to accommodate individual demand while keeping costs under control, which is another pressing factor that healthcare providers must take into account (Breedveld et al., 2006; Gooijer, 2007). To integrate patient services of a large healthcare provider, Meyer et al. (2007), for example, propose a platform of processes common to all patient-care services, with modular sets of processes for individual services. The authors applied modularity to the planning of patient services across a care trajectory and showed that this can improve care and achieve financial efficiency. Bohmer (2005) advocates a more patient-oriented approach through seamless combination of standard treatment processes. Subsystems are selected from a pre-defined menu and combined to address those dimensions in which groups of customers have the same needs, thereby gaining advantages in cost, time, and quality. Still, each patient receives a different combination of standardized

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