Engagement Leading to Empowerment-Digital Innovation Strategies for Patient Care Continuity

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Abstract

Digital innovations have started to extend the value chain into the customer decision making process, enabling firms to support two major types of customer services: empowerment prior to customer purchase and engagement during and post-purchase. Service organizations such as health care firms, by virtue of their intense engagement with patients during in-patient care, have a unique opportunity to empower patients' health care choices once they become outpatients. Understanding patient ecosystems and social support networks during this engagement has important implications for the digital transformation of care-related support to reduce health care costs and also empower patients to self-manage their health. This research uses a framework to develop alternative care support environments and, using four case studies, to develop a research agenda for digital transformation to support the empowerment of health care consumers by engaging them effectively inside the hospital.

Keywords: Continuity of Patient Care, Engagement and Empowerment Services, Digital Transformation, Health IT

1   Introduction

Digitisation has advanced the business value chain into customer decision making and has made the transformation of businesses to meet evolving customer expectations a competitive necessity for innovation. The evolving service technology innovation landscape, which influences customers' desire to search, select, purchase, and continually assess their decisions post-purchase, has started to make it essential for businesses to understand customer decision perceptions (Sandhu 2012, 2011). The rapid design and delivery of digital services in support of business transformation to create sustained business value has become an important priority (Sandhu & Corbitt 2003). The need of businesses for speed (Bossart et al, 2013) and agility in the use of internal and external resources to create value through innovative "services" has been the major premise of service dominant logic (Lusch & Nambisan, 2015).

For discussions in this paper, we will use Figure 1 to classify "services" using customer decision making as the anchor. The empowerment services are designed to make customers aware (intelligence phases) of what businesses have to offer and support their decision making to purchase the product/service (design and choice phases) (Simon, 1947). The engagement services include activities involved in the actual purchase and "use" of the product/service purchased. These empowerment and engagement services are in turn supported by the business value chain (Porter, 1985). We classify these as customer interfacing activities (primary and support activities, such as marketing, sales, distribution, and service after sale used to interact and engage customers) and business operations (all other activities, including the supply chain, to support customer interfacing activities).

The digital transformation challenge for businesses today is to transform business operations with speed and agility. The speed is needed for faster alignment of business operations with customer decision making as businesses empower customers to evaluate offers made and engage them to meet their expectations during purchase and post-purchase. Agility allows adaptation of business operations with customer decision making as businesses empower customers to explore product/service configuration options prior to purchase and engage them during purchase and post-purchase if expectations change. In other words, businesses must adapt the (technical) design and (business) delivery of (digital) services to empower and engage customers through their evolving customer journeys.

Engagement Action (during use) Action (during purchase)	Support purchase and post-purchase use	Align operations and supply chain for sale & retention
Empowerment Design/Choice Intelligence	Support customer decision making	Align operations and supply chain for competitive offer
	Customer Interfacing Marketing, outbound logistics, sales, service) + Support Activities	**Business operations** Operations, inbound logistics + Support Activities

Figure 1. Services Developed to Support Customer Decision-Making and Action

Businesses use remote monitoring technologies, surveys, reviews on blogs, and discussion boards to learn about customer decision journeys during the "use" cycle of engagement to improve the "empowerment" services of customers. The longer the "use" cycle, the more opportunity there is to gather information about the customer journey after purchase and to influence their future decision journey in the purchase of the next product/service. In other words, digital strategies today use the analysis of engagement services currently being used to transform the design and delivery of empowerment services to support future sales and use. In general, service firms have a shorter use cycle (e.g. restaurants, travel, entertainment services, etc.), and, in many cases, the purchase and use cycles are intermingled. For shorter "use" cycles, digital strategies must effectively combine the design and delivery of engagement services (i.e. the automation of activities related to "customer interfacing" and "business operations") to influence their empowerment services that will lead to sales.

Health care transformations poses a particular challenge. Except in cases when repeat customer purchase of health care services is involved (e.g. dental, eye care etc.), engagement services in health care do not, and in some cases should not, lead to repeat business (as in the case of "unanticipated" readmission of patients for the same illness). Secondly, while effective engagement services can increase patient and physician satisfaction for future referrals, these engagement services extend the health care

organization's boundary and include many external factors such as patient ecosystem and players such as other care providers, which are not under the control of the organization. In other words, to even reap the benefits of reduced readmission costs and potentially good reviews of patient care quality, digital strategies to support patient engagement require the transformation of patient care inside to outside the hospital. There is a need for a systematic evaluation of the patient journey during the engagement phase to help health care organizations develop digital transformation strategies that will improve patient well-being and reduce overall health care costs. This is the goal of this research.

The paper is organized as follows. The next section provides a context for the study. Section Three develops a framework to understand the patient journey post-discharge using four case studies and the role various stakeholders play in the digital transformation of this journey. Section Four identifies select digital strategies hospitals can use to support digital transformation of the extended value chain of the hospital. The last section provides concluding comments and a research agenda for the future.

2 Digital Transformation in Hospitals

Health care customers can be in multiple states: *healthy state, health maintenance state, health-monitoring state (e.g. chronic conditions), and patient state*. A customer can move from a healthy state to a health maintenance state if certain health conditions, such as high blood pressure, high cholesterol, obesity, etc. are identified as sources for future complications. The health maintenance state, if not supported effectively, can lead to more serious health conditions that may require a continual health monitoring state (e.g. diabetes type 1 or 2, heart condition, or other chronic conditions). When a health care consumer comes to a hospital, he or she is in a "patient" state seeking care related inpatient services. A customer can move from a patient state to any other state once discharged.

Independent of how a customer's journey led him/her to a patient state, we will focus on what happens to this patient once they are in the hospital. Digital transformations in hospitals have focused on addressing care quality and patient engagement in different care units within the hospital, besides the use of electronic medical records to support patient data sharing by clinical and administrative personnel. Some have focused on leveraging advanced technologies to track patient flows in ED to reduce delays and improve patient and nurse/physician communication (Burke et al. 2004), to optimally allocate operating rooms for surgeries using data analytics (Raghupathi and Raghupathi 2014), and to reduce patient falls, hospital acquired infections, etc. in patient rooms (Weiner, et al, 2016). Besides digital transformations, several process innovations were used to improve patient engagement (Fowler et el 2018).

Given the importance of patient engagement in care processes post-discharge, prior research (Kripalani et al. 2013) has identified nine discharge services. Some of these need hospital engagement with patients in patient rooms, while others require the engagement of external care providers. The next section will discuss four case studies that illustrate varied engagements between hospitals and external care providers in order to understand the patient journey complexities.

3 Extending Engagement Post Discharge

In this section, we will illustrate four different case scenarios to understand the complexity of digital transformation of patient engagement once a patient leaves the hospital.

Case study 1: RSVP System

RSVP stands for the Remote Specialist Visiting Physicians program (RSVP, 2016). External care coordinators recruited from the local fire department—emergency medical technicians (EMTs)—visited patients as a follow-up and engaged in a two-way consultation with physicians using video conferencing technology (e.g. SwyMed Telemedicine). In addition, the hospital partnered with Vivify Health, which provides a kit to help patients monitor their vital signs and consult with a hospitalist at the hospital as needed. The program's goal is to stop the escalation of illnesses and reduce unnecessary hospital readmissions. The success of the pilot effort in reducing readmissions led the hospital to extend it to other patients in other regions. The engagement here includes patients in a supportive ecosystem (patients living at home).

Case study 2: Physician/Nurse Intervention

In this case, the hospital uses a team of a physician and advanced nurse practitioner to coordinate the care of cardiac patients who are discharged to a nursing home (Jones et al, 2013). The program started in March 2011, and the frequent personal visits of either or both of the team members to the nursing home helped educate the nursing home staff on what symptoms to look for when a patient is in an agitated state. The nursing staff can use the team for consultation over the phone or in person to address the situation at the nursing home itself, rather than send them to the ED. The intervention led to a reduction in readmissions and is being expanded to other nursing homes in Michigan, with the expectation that tele-health monitoring devices and mobile apps can help support the increased scale of the patient/care staff engagement. This represents the engagement of patients in a less-supportive eco-system (i.e. people in need of care outside their home) and who need continual health monitoring.

Case study 3: Social worker engagement

Recognizing the impact of socioeconomic status on diabetes, the Mobile Health Program in Seattle, managed by the Global to Local [GlobalToLocal] organization, recruited a number of health care consumers after they visited a hospital. The aim was to ensure that these patients maintain their health condition or potentially improve it, but not suffer deterioration. The community that was selected experiences significantly higher rates of poverty and premature death, has many immigrants and refugees, and faces multiple barriers to accessing health care and navigating care related practices and systems. The study has provided iPhones and has allowed patients to participate in customized healthy cooking classes once a month, taught by a nutritionist. In addition, the patients interacted with their case manager (CHW) via reports sent from an iPhone-compatible application that tracked blood sugar levels, nutrition, and exercise. This case illustrates how to engage health care consumers in a less supportive ecosystem, maintain their health, and empower them with education and mentoring.

Case study 4: Self-health management

Several seniors at a community centre for the elderly in Michigan were interviewed to assess their health maintenance needs (Bhatia, 2017). While many have identified ways to get care related alerts contextually (when they are watching television or interacting with others socially), they expressed the desire to use technology to allow their family members to participate in their care and related activities to reduce stress (e.g. that caused by a car not working or heating system failures) and loneliness. This illustrates the case of health care consumers in a supportive ecosystem needing support from family and friends to maintain their health. These four cases summarize four different types of engagement as shown in Figure 2.

	Health maintenance (& Healthy) State	Health monitoring state
Supportive eco-system	Awareness and Empowerment w/Technology — Q3	Awareness and Empowerment with External Care Providers w/Technology — Q4
Limited support from eco-system	Awareness and Empowerment of Social Network w/Technology — Q1	Awareness and Empowerment with External Care Providers and Social Network w/Technology — Q2

Figure 2. Strategies for Engagement

Quadrant 2 engages health care consumers at nursing homes to monitor their health using a mix of health care providers and nursing facility personnel, while Quadrant 1 engages health care consumers needing health care maintenance using social workers and community members. The RSVP system was designed to support health monitoring of health care consumers using a mix of physicians and other community care providers (Quadrant 4), while seniors living at home need to maintain their health using reminders and stress reducing activities (Quadrant 3). The next section will discuss the role of the ecosystem and care management grid (shown in Figure 2) to help develop the transformations needed to support patient engagement and empowerment, as part of hospital's digital strategy.

4   Digital Assessment and Strategy

Given that much of the health care consumers' journey begins when they enter the hospital as a patient, the engagement phase within the hospital should try to begin to empower patients. Hospitals need to

use approaches to inform and educate patients about the health care conditions that made them become a patient, and to engage them in care related choices and treatment options whenever appropriate. One hospital in Michigan has started to provide patients with a book with detailed information on the care they are undergoing (Fowler et el 2018). This allows patients to record and ask questions, and to see what actions they need to take once they are discharged, including making their first follow-up appointment. Other strategies are discussed briefly below.

Patient portals are used to share information but are less effective when they support only one-way communication from provider to patient. To make portals active social media forums, a two-way communication and consultation through alerts and automatic scheduling of appointments, along with the engagement of other members of the patient ecosystem, is required. *Telehealth technologies* are used to support communication between the patient and the provider. Their effectiveness depends on how engaged both the patient and providers are in using this communication for follow-ups and conversations. Again, given the varying nature of the ecosystem that supports patients, these technologies have to use different types of interaction (e.g. Skype, video conferencing, text, chat, etc.).

Medical devices are used to track health conditions (wearables) or activities (apps that track steps walked) are important in empowering patients to self-manage their health, but they must be connected to other patient/physician communication tools if they are to be effective, and they must be connected to other technologies used by patients (iPads or TVs) to support effective engagement. *Infomediaries and health care sites* (e.g. WebMD) are used to inform patients about the services available for them to learn about disease symptoms and criteria relevant in decision making. However, for these sites to be effective, consumers need to not only know how to seek answers to questions they have but also to stay involved in these interactions. For example, those who went through elective surgeries (e.g. cosmetic) and shared their experiences with peers and physicians/experts have been shown to be effective (Khuntia et el 2017). *Social media* used to share information about health and non-health care needs, combined with other uses of social media (talk to friends or play games), can reduce patient isolation. When combined with apps on iPads, it can increase the comfort level in using them. In summary, developing digital strategies to engage health care consumers inside the hospital so they are empowered when they leave the hospital begins with an assessment of the health state of a patient and the nature of the ecosystem they enter when they leave the hospital. Select questions shown in Table 1 provide examples.

Empowerment Assessment	How do patients become aware of care related symptoms and treatment options?
	What do patients look for in evaluating care related options?
	Which organizations do patients belong to that support their knowledge gathering?
	Is there care related support for immediate care, preventive care, and care that needs continual attention?
	Who else besides patients are engaged in decisions related to choosing care related options?
	What resources can the patients bring to have confidence in their care related choices?
Engagement Assessment	Who can help support patients select care options?
	Who is paying for the care chosen?
	What trade-offs is the patient willing to make between price, time, convenient access to care, who provides it, etc.?
	How capable is the patient in self-managing their own care - emotionally and access to care facilities?
	Where is the care provided post discharge?
	What social network can thee patient rely on in seeking support during care follow-up?
	Does the patient have sustained access to physicians or other care providers to support care?

Table 1. Some Questions Related to Empowerment and Engagement

5 Conclusions and Future Research Directions

Hospitals need to tailor their digital transformation effort to support patients in their ecosystem. This paper argues that patient empowerment to self-manage their health in this ecosystem begins with their engagement with hospital staff inside the hospital and effective support of care and a non-care support network outside the hospital. Future research needs to view patients as health care consumers and tailor the empowerment strategies to make them be innovative in their use of care processes and technology to self-manage their health.

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