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Improving healthcare quality: A technological and managerial innovation perspective

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ABSTRACT

This paper provides an overview of the current state of the art in the field of healthcare quality, with a special focus on technological and managerial innovation. It also serves as an introduction to the special issue of healthcare quality and innovation. We synthesize the results of selected studies, emphasizing the themes of healthcare quality and innovation in terms of diversity of continental localities, study purpose, study methods, and topics discussed in each individual paper. Our review provides valuable information and strategic insights for healthcare policy makers and managerial decision makers in both the private and public sectors to use in planning and controlling healthcare quality, activities, and services.

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1. Introduction

Healthcare quality is a major driver of innovation, growth, and competitiveness. Healthcare quality and its relevant associated businesses, particularly from a managerial perspective, are a key source of business dynamism, innovation, and improvements in the social ecosystem. However, current healthcare quality performance is inadequate in both developed and developing countries. The implementation of meaningful advances in social changes through healthcare quality innovation will require a number of initiatives, including promoting a new quality paradigm in the healthcare industry, synthesizing expertise on ways to prevent social vulnerability, a commitment to the systematic practice of innovation, and methods to facilitate access to resources. Since an overview of the current state of the art in healthcare quality has not been properly explored, this paper will combine a literature review with an introduction to special issue papers focusing on the three sub-topics of healthcare technology, process, and knowledge innovation; the healthcare value chain, supply chain, and logistics; and the healthcare system, quality, and social innovation.

In the United States (US), healthcare spending represented approximately 18% of the gross domestic product (GDP) in 2011 and is predicted to reach 20% by 2020 (Berwick and Hackbarth, 2012; Keehan et al., 2011). New technology and its broad adoption into the healthcare industry are considered two of the main contributors to

this spending increase (Aaron and Ginsburg, 2009; Barbash and Glied, 2010; Burns et al., 2011; Hillestad et al., 2005). In these previous studies, new healthcare technology emergence equates with higher fixed costs to hospitals and additional packages to insurance companies and federal supports, such as Health Information Technology for Economic and Clinical Health. In contrast to other industries, new technology has been slow to be adopted. In the present special topic issues, we emphasize a variety of technological innovations in the healthcare industry and provide points that lead to innovation with healthcare policy makers and decision makers who are keenly aware of how to connect these points with technological innovation. The theoretical argument for expanding the concept of innovation originates in the definition of innovation and healthcare structure.

Historically, innovation in other industries is generally studied from the perspectives of production and process development (Utterback and Abernathy, 1975). However, most healthcare organizations find it challenging to innovate within organizations in terms of management, system, and culture (Boer and During, 2001; Damanpour and Gopalakrishnan, 2001; Dougherty and Dunne, 2011; Francis and Bessant, 2005). The unsettling task of applying organizational approaches to innovation requires further study. Moreover, innovation in the healthcare industry has yet to uncover its impactful potential to innovate, even though there has been much recent progress on many fronts, such as open innovative systems (Bessant et al., 2012), innovative dynamics in hospitals (Djellal and Gallouj, 2005), the implication of Geisinger's practice (Paulus et al., 2008), and the influence of top managers in adopting innovative management practices (Young et al., 2001). These meaningful studies should help to integrate validated healthcare innovation models for practitioner use.

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The healthcare industry is distinctive in that its performance measures extend beyond profit maximization or cost minimization; instead, the industry may pursue goals such as cancer survival rate increase, longevity increase, reduced surgery recovery time, or an increase in the quality of life of patients with chronic diseases, which has improved in the US (Porter, 2010). Performance measures in healthcare are most intensively studied, which reflects hospitals' quality of care and efficiency. Currently, public and private efforts to report on hospital performance have mostly utilized process and outcome measures of quality (see the accreditation of hospitals by the Joint Commission: Accreditation, Health Care, Certification (JCAHO), The Healthcare Effectiveness Data and Information Set (HEDIS)). Outcome measures predominate and include mortality, complication rates, costs, etc.; process measures include evidence-based care guidelines (Palmer, 1997).

Thus, this introductory paper is intended to identify emerging study topics in the field of healthcare quality and innovation management. The papers covered in this review address the valuable implications of social change through healthcare quality innovation, and their topics include studies of multi-sectors, health service providers (physicians and hospitals), health service buyers (insurance companies), regulatory agencies (the Food and Drug Administration (FDA)), pharmaceutical companies (medicine providers), pharmaceutical innovation for FDA approval, health service provider adoption of mobile technology, knowledge centrality, and process innovation in Swiss Hospitals. Hence, this review illustrates the complex dynamics of technological and managerial innovation that are unique to healthcare quality.

2. Healthcare quality innovation

The cost versus merits of new technology adoption is not the intended focus of this editorial. Researchers have already studied the benefits of health information technology (HIT) adoption versus financial investment (Hillestad et al., 2005; Schoen et al., 2006); the impact of Electronic Health Records (EHR) implementation in practice: the quality or efficiency in ambulatory care (DesRoches et al., 2008); the quality of medical care and healthcare (Jamal et al., 2009); and EHR and the impact of decision support (DS) on ambulatory care quality (Romano and Stafford, 2011). While TFSC routinely highlights the significance of technology and its impacts, technological innovation is not the only solution for healthcare innovation.

It is our belief that, due to its sheer size and complexity, healthcare innovation is necessary in every healthcare sub-sector. The healthcare industry roughly consists of four sectors: health service providers (physicians and hospitals), health service buyers or payers (insurance companies), regulatory agencies (FDA), and suppliers (pharmaceutical companies) (Burns et al., 2011). To usher in innovation engagement from each sub-sector, the theoretical and empirical studies of healthcare innovation must become more vigorously active, which is why we focus on holistic approaches to innovation in the healthcare industry that make a major contribution to healthcare researchers and practitioners.

To better understand innovation in health care, it is necessary to briefly discuss the healthcare sub-sectors. As healthcare service providers, hospitals strive to increase cancer survival rates, reduce surgery recovery times, enhance the quality of life of patients with chronic diseases, and improve longevity and preventative disease measures. These overarching goals should not be confined by cost or by process improvement practices (Porter, 2010). However, this is typically not the case, as cost effectiveness and process measures have become the most validated methods of evaluating hospital performance to determine their sustainability. For example, the Balanced Scorecard was developed by Kaplan and Norton (1996) and serves as an integral measure of both external and internal aspects of a hospital organization, such as customer service, innovation, learning, and financial performance. In contrast, the total quality management (TQM) tool examines process measures of patients in hospitals (Carman et al., 1996; Douglas and Judge, 2001). Currently, public and private efforts to report on

hospital performance have utilized both process and outcome measures (see the accreditation of hospitals by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and Healthcare Effectiveness Data and Information Set (HEDIS)). These process measures include evidence-based care guidelines, which enable hospitals and health service providers to confine their processes to a measurable level of performance (Palmer, 1997). The empirical research paper by Cleven et al. (in press) supports the increased use of process measures. These authors conclude that the attentiveness toward process in Swiss Hospitals has meaningful findings for researchers and practitioners in that the process-oriented construct is positively correlated with both quality of care and financial performance.

The pharmaceutical industry is a supplier of medications, another integral component of healthcare innovation. Two approaches to innovation dominate studies in the pharmaceutical industry: knowledge protection as innovative incentives based on laws and legal agencies and knowledge sharing and transfer as innovative activities both within and between firms. The expedited process for new drug applications (NDAs) encourages pharmaceutical companies to develop novel drugs from new molecular entities and grants protections for them, enabling companies to capitalize on their research and development (R&D) investments into their lengthy drug development process (Kesselheim, 2010; Kushner, 2008). Under current regulations, the pharmaceutical industry has produced new drugs along with new patents and exclusivity rights. The number of patents and their length of exclusivity often determine the economic value of new medications and provide companies with financial compensation for their long investment process. Knowledge sharing and transfer within and between pharmaceutical and biotech R&Ds were examined as innovation activities (Cummings and Teng, 2003; Gassmann and Reepmeyer, 2005; Orsenigo et al., 1997). In terms of innovation and innovation management, the pharmaceutical industry is exemplary at interconnecting new knowledge creation, new drug development, and economic value creation. Along this same line of research, a paper by Dong and Yang (in press) investigates the murky area between knowledge spillover and new product development in the US pharmaceutical industry and reports a significant implication of knowledge centrality when analyzing network and patent citations.

Finally, healthcare regulation and healthcare policies drastically impact insurers, the uninsured, insurance companies, Medicare, Medicaid, and Veterans Health Administration beneficiaries. Notably, since the Affordable Care Act (ACA), also known as Obamacare, was activated, the US healthcare industry has been rattled. The ACA created many political complications and conflicts of interest between federal and state governments, including the two main political parties (Jones et al., 2014). In 2015, there were mergers and acquisitions among the top five healthcare insurers to develop efficient operating costs and to generate more than half of their revenues from the Medicare and Medicaid government programs.

It is clear that the current industrial map has changed. This new environment is a reverse of the reimbursement policy changes that took place during the 1980s when the US hospital industry was in turmoil. This change altered consumer expectations and created new sources of competition (Ginn, 1990; Thomas and McDaniel, 1990). As a result, US healthcare public policy shifted from planning and regulation toward a more competitive environment (Benjamin and Lee, 1988). After the Hill-Burton Act expired in 1974, federal legislation pursued cost reductions and healthcare quality improvements. In 1982 and 1983, federal and state governments launched regulatory actions. Essentially, the Medicare Prospective Payment System (PPS), enacted in 1983, was a prospective reimbursement of hospital expenses for Medicare patients that forced hospitals to contain operation costs and vigorously compete with other hospitals. Under the PPS reimbursement system, hospitals receive a set amount to treat a patient with a given diagnosis regardless of the actual costs incurred. This change in policy has driven all hospitals to become more economically oriented.

These industrial challenges led scholars to investigate whether environmental changes have an impact on strategy, essentially offering the most veritable anatomy of hospital management and providing the most valuable contributions to future research at the time (Bigelow and Mahon, 1989; Friedman and Shortell, 1988; Ginn, 1990; Meyer et al., 1990; Shortell and Zajac, 1990). Studies have revealed that hospital management is distinctive from leadership in other business settings (Thomas and McDaniel, 1990). Therefore, this is a good time for the TFSC to emphasize the importance of investigating holistic approaches to innovation in the healthcare industry.

Papers addressing the state of recent health quality and innovation include studies from all sub-sectors; specifically, these articles focus on health service provider adoption of mobile technology and its link to quality of care, knowledge spillover, and new product development in the US pharmaceutical industry and process innovation in European hospitals. To illustrate the important dynamics of the healthcare industry, we broadly categorize these papers into three major areas: 1) healthcare technology, process, and knowledge innovation; 2) healthcare value chain, supply chain, and logistics; and 3) healthcare system, quality, and social innovation.

3. Healthcare technology, process, and knowledge innovation

This special issue illustrates important dynamics in the healthcare industry and includes studies from all sub-sectors. Specifically, the included articles address health service provider adoption of mobile technology and its links to quality of care, knowledge spillover, and new product development in the US pharmaceutical industry, as well as process innovation in Swiss hospitals. Furthermore, healthcare technology adoption has been a most intensive and competitive study area, with studies included from Malaysia, the United Arab Emirates, and Korea.

Dong and Yang (in press) examine knowledge sharing and knowledge creation patterns in the US pharmaceutical industry. Notably, this industry generates the largest number of new drugs for global markets, which is the result of scientific knowledge creation. Researchers and practitioners show great interest in the relationship between knowledge sharing and knowledge creation, which is the definition of innovation in the pharmaceutical industry. In prior studies, knowledge sharing has been examined using a firm's number of social network partners, which has produced conflicting findings; some indicate a positive effect (Ahuja, 2000; Owen-Smith & Powell, 2004), while others have a negative effect (Rothaermel and Alexandre, 2009; Wadhwa and Kotha, 2006). Hence, social networking may not be a reliable proxy of knowledge sharing (Phelps et al., 2012). Dong and Yang (in press) measure patent citations and suggest an alternative proxy to assess knowledge sharing among pharmaceutical companies. Their findings are counterintuitive in that knowledge network centrality has reduced new product development: being in the center of patent citations may not lead to new products, at least in the pharmaceutical industry. In the pursuit of innovation, studies with similar findings have an inverted U-shape for the network effect on innovation, i.e., strategic alliances and new product development (Deeds and Hill, 1996); Chinese firm technology innovation and external sources (Chen et al., 2011); and individual scientists' network positions and knowledge creation (McFadyen and Cannella, 2004). Using different methods, Dong and Yang (in press) shows consistent outcomes, which indicates that this study serves as the mainstream of innovation management research, where innovation emerges.

Cleven et al. (in press) investigate the linkages among process, clinical quality, and performance in Swiss general hospitals. Data in their Structural Equation Modeling (SEM) indicate reliable support for the relations among processes, cost efficiency and clinical quality, each of which was associated with financial performance and patient satisfaction. Their process orientation construct is a stepping-stone between qualitative care and financial performance, expanding the mainstream

of hospital management research and its heavy reliance on the Malcolm Bridge National Quality Award (MBNQA), HEDIS, JCAHO, and the Balanced Score Card (BSC). This study therefore provides potential solutions for practitioners to use to pursue qualitative care and to achieve financial goals. In the hospital setting, it would be beneficial for hospital management to develop a process orientation since it is an essential approach to financial performance and quality care. Particularly, the clinical quality construct reflects the degree to which a hospital adheres to quality standards and limits complication and re-hospitalization rates. The meanings of the terms "organizational performance" and "institutional success" in the hospital sector have been extensively discussed.

In this same area, two studies report on healthcare information technology adoption. The first addresses the effect of U-healthcare service quality on usage, while the second provides a fuzzy analytical process to determine the importance of hospital information system adoption factors. Jang et al. (in press) mainly focus on what causes healthcare providers to adopt new technology in regard to its features, functionality, expectancy, and benefits. Their study examines U-healthcare services, which are individualized, mobile healthcare services offered by health service providers in hospitals to advance a health technology adoption model, and verifies the constructs of the U-healthcare services adoption model: connectivity, compatibility, complexity, perceived benefit, and perceived trust. This model refines a framework that offers new insight to researchers and practitioners with a meaningful context that shows what makes U-healthcare information technology attractive to healthcare service providers. Specifically, 142 surveys indicate that all five of the U-healthcare constructs have high validity and reliability to validate the researchers' proposed model. Their study reinforces the highly optimistic view of U-healthcare services to provide uninterrupted quality of healthcare to patients and easy communication and information sharing between doctors and designated hospitals.

Mehrbakhsh Nilashi et al. (in press) provide a vivid picture of what prevented Malaysian hospital management from adopting healthcare information technology, including financial barriers and external barriers, mostly with a social context. Their study addresses the following questions in their hospital information system (HIS) study: (a) What is the current situation of HIS adoption in Malaysia? (b) What factors significantly influence the organizational adoption of HIS in Malaysia? (c) What suitable theoretical model can be proposed to facilitate the trend of HIS adoption in Malaysia? and (d) What multi-criteria decision-making (MCDM) model is suitable to weigh the factors for HIS adoption in a public hospital? Their study provides a deep analysis of managerial decision-making on technology adoption in the Malaysian hospital setting, suggesting that managerial decisions may be embedded in a social context. Additionally, the study is a unique contribution to HIS studies, which normally focus on how to infuse "adverse drug event monitoring; clinical decision-support capabilities; context-aware public displays" into HIS daily operations (Classen et al., 1992; Favela et al., 2004; Gardner et al., 1999).

4. Healthcare value chain, supply chain, and logistics

Both technology adoption and the new product development process present complex challenges for the management of healthcare supply chains with respect to healthcare quality. Some of these challenges may be mitigated through innovation leadership and logistics strategies to provide increased efficiency from operational technologies, such as electronic patient records, electronic data interchange (EDI), or radio-frequency identification (RFID). For a comprehensive overview of applications of RFID, including RFID in healthcare supply chains, we refer to the survey paper by Gaukler and Seifert (2007). In this special issue, one of the main contributions is to explore a new product value chain, supply chain and logistics area. Callegaro et al. (in press) focus on customer value creation. Yoon et al. (in press), Kwon et al. (in

press), and Landry et al. (in press) focus on healthcare supply chain and logistics strategy deployment and innovation leadership, with both contributions highlighting the role of technology.

Callegaro et al. (in press) use the example of an elbow rehabilitation device to study a quantitative way of managing and prioritizing various stakeholder requirements in the new product development value chain. To accomplish this, they integrate customer value chain analysis (CVCA) with a quality function deployment (QFD) approach. Using CVCA, critical stakeholders in the new product development process are identified, and stakeholder requirements are collected via a survey and through secondary sources. Requirements are then prioritized using QFD methodology, resulting in a more complete identification of stakeholders and improved prioritization, which ultimately lead to a more efficient new product development process.

Yoon et al. (in press) investigate the impact of innovation leadership and supply chain innovation on healthcare supply chain efficiency. In particular, they set out to identify any moderating effect of hospital size (in terms of the number of beds) on this relationship. Their study intended to develop a survey to be administered in a sample of Korean hospitals. Structural equation modeling and hypothesis testing are then used for analysis. Their study reveals that supply chain innovation affects supply chain efficiency regardless of hospital size; thus, innovation plays a crucial role in the operational improvement and delivery of healthcare quality. As an example of such innovation, the article highlights the use of RFID and corresponding information technology (IT) applications. Therefore, operational efficiency is achieved through supply chain innovation in conjunction with innovation leadership.

Kwon et al. (in press) explores the effects of the healthcare supply chain in managing healthcare costs and improving quality in terms of cost per patient discharge of healthcare operations, while also raising the quality of care and reducing the re-admission rate. Their paper shows that supply chain principles should be deployed to generate a supply chain community surplus where healthcare resources can improve the quality of care. Three proposed strategic areas are identified: to maximize revenue to the service provider, to understand supply chain principles in the healthcare industry, and to improve its processes. The study suggests that efficiency and effectiveness coexist in the supply chain and create a supply chain surplus where these extra resources will be diverted/reinvested into areas that benefit customers (patients).

Landry et al. (in press) provide a case-study comparative approach to the topic of deployment of a logistics strategy in the healthcare services sector. This tactic is motivated by a seeming contradiction: most healthcare institutions are well aware of industry best practices, yet so many of those same institutions struggle with deploying those best practices. To provide some insight into specific deployment problems, this paper describes two longitudinal case studies of two Canadian hospitals that have focused on the improvement of their respective materials management processes. The case of Hospital A begins in 1999 with the arrival of a new materials management department head, who first implements an integrated inventory control system along with automation of inventory retrieval processes. In particular, RFID technology is successfully deployed, first as a pilot and then across 85% of nursing units in the hospital. The case study for Hospital B starts in 2005, also with the installation of a new logistics leader, who championed the alignment of logistics practices as well as centralization of inventory. Hospital B was able to learn from Hospital A's earlier implementation success with RFID. In comparing and contrasting the two case studies, Landry et al. report that there are two key aspects that govern the success of logistics deployment: the strategic intent must be clearly defined by the logistics leader, and the rollout of new processes is achieved in stages using pilot studies. These aspects provide for the crucial steps of learning and reflection and fine-tuning of those processes, as well as time for the organization to absorb the innovation.

5. Healthcare system, quality, and social innovation

Five studies have been conducted in the emerging area of healthcare system, quality, and social innovation in the countries of Australia, Austria, Japan, Korea, and Italy. The first contribution identifies the factors of social vulnerability among the aged in Australia to advance social life using social robots. The second study develops a decision support model for improving healthcare cost and effectiveness of a medication to treat Hepatitis C virus (HCV) infections in the European public medical sector in terms of short- and long-term concerns. The third study is conducted to explore the economic relationship between supply and demand in the local healthcare system in Japan. The fourth paper develops a patient-centric quality assessment framework for healthcare services through a Korean hospital case study. The fifth paper presents healthcare efficiency in terms of medical technology and IT acquisition impacts in hospital wards.

Khaksar et al. (in press) identify the factors of social vulnerability among the aged in Australia to improve social life using social robots. Their paper focuses on the role of a social robot as a service innovator. Innovative care service facilities for the aged may play a mediating role between social robot services and social vulnerability reduction. Study 1 focuses on collecting qualitative data through in-depth interviews of 17 specialists in both aged care and social robotics to draw a conceptual model and the necessary hypotheses. It examines the relationship among aged care service innovation, robot service enablement, and robot mediation. Study 2 explores the study model using survey data distributed among 335 aged-care specialists. It examines the relationships among aged-care service innovation, socioeconomic accessibility, and augmentation of community ties in older people. The study results reveal both direct and indirect impacts and suggest that it supports a direct impact of robot mediation on the aged. The results of Study 2 indicate that both the direct and indirect effects of social robot enablement and robot mediation are effective at reducing social vulnerability through aged care service innovation.

Zsifkovits et al. (in press) focus on developing a decision support tool to improve the healthcare cost and effectiveness for a medication to treat HCV infections in the European public medical sector in terms of short- and long-term concerns. The proposed micro-simulation model can be applied to the Austrian healthcare system. The initial results present a clear trend with a short-term view of the issue of new medication for HCV and its cost to and effectiveness for patients. The study results of the reimbursement strategies of European countries show a preferred treatment for patients with cirrhosis and indicate that it may be inefficient in terms of the ratio of patients cured and the cost. These results indicate that, as more patients receive new medications, the cure rates increase and more people become virus-free. The total costs increase in all scenarios when a new medication is used and more patients are treated, whereas fewer infected individuals exhibit long-term complications and decreased costs. Thus, the study suggests reimbursement strategies for new HCV medication.

Xing and Oyama (in press) explore local public hospital (LPH) burden on supply and demand in the local healthcare system in Japan. It uses proxy variables, such as proportion of LPH beds used as an indicator to measure the LPH burden for local governments, the number of hospital personnel as an important supply-side factor of healthcare systems, and the national medical expenditures as a major demand-side for specific regions. During the first decade of the 21st century, the soundness of the Japanese healthcare system was challenged by a number of problems in the LPH system: high operating costs, crippling debt, unfavorable management, and substantial brain drain. Since the LPH was established in Japan to provide equal accessibility and to enhance the quality of the healthcare system, many difficulties in the LPHs have been encountered regarding equal accessibility of the healthcare system and the development of financial performance. The finance strategy and its delivery system are two major essential aspects for improving the healthcare quality and its system in Japan. This study

suggests that LPHs play important roles in promoting technology innovation and more advanced technologies to attain a higher healthcare quality for the overall system.

Park et al. (in press) investigate a patient-centric quality assessment framework for healthcare services in Korea and propose such a framework to improve service quality through personal experiences between the healthcare provider and the patient. This framework suggests the development of a quality score to measure patient expectations from a customer experience management perspective. A survey instrument that uses both intrinsic and extrinsic values is designed to model a specific healthcare service framework on patient experiential value. A case study of a childhood asthma atopy center in a general hospital is also investigated to create an assessment instrument for a specific healthcare facility. The first stage involves developing a schema for a healthcare service delivery system for a patient receiving treatment for digestive disorders due to allergy. The quality scores aggregated by a proposed score matrix can identify the overall healthcare service quality and therefore provide the level of service at each touchpoint stage. This study suggests that the preferences of each patient can be identified by this quality score matrix so that a more customized service can be provided at each stage.

Ancarani et al. (in press) investigate how medical technology and IT acquisition impact the efficiency of hospital wards. The authors provide data and analysis of three public hospitals in Dubai, with a particular focus on the potential moderating effects of management style and leadership goals of hospital ward leadership on technology acquisition and efficiency. Methodology-wise, these authors employ data envelopment analysis (DEA) to estimate the relative efficiencies of the wards in the study and regression analysis to identify the relationship between management style and efficiency. They report that misalignments between general hospital and ward management priorities negatively moderate the relationship between technology adoption and ward efficiency. Task conflict and a longer tenure of the ward leader also negatively affect the efficiency relationship, which suggests that the ward leadership position is crucial, and that younger ward leaders, with concomitant shorter tenure, may show more enthusiasm for new technology and IT adoption.

6. Conclusion

This study examined the current state of the art in healthcare quality and innovation area and synthesized the results of selected studies in healthcare quality and innovation. This special issue provides major contributions to health care innovation. First, we captured the dynamic voice of each sector in a notably fragmented health care industry, which includes the pharmaceutical industry, hospital industry, regulatory agents, and insurance. Second, it is our deepest honor to provide a voice for a diverse body of researchers around the world while simultaneously adding valuable contributions to the mainstream healthcare discussion on quality and innovation. Although healthcare and innovation in academic research is challenging, it is an important endeavor for researchers to pursue.

Despite the pride in our special issue's aforementioned contributions, there are important limitations we would like to acknowledge. In order to achieve healthcare innovation, we cannot underestimate the significance of healthcare policies that may have an impact on industrial map changes in coming decades. Specifically, this issue lacks the perspective of healthcare policy-makers who recognize incentives and reimbursement of healthcare policy in the long term. Another limitation is that healthcare consumers remain underpowered. Although they are both end users and beneficiaries of healthcare providers and pharmaceuticals, these ultimate beneficiaries of healthcare and value creation do not have an influential position in the third-party payer system that is composed of complex combinations of deductibles, coinsurance, copayments, and limits. More in-depth studies could be addressed in the future.

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