

**NETWORK LOGICS AND COPING WITH SOCIETAL CHALLENGES: AN  
EXTENDED FRAMEWORK FOR IT-ENABLED BUSINESS MODEL INNOVATION**

**Abstract.** We argue that ICT offers significant contributions to solving societal challenges if organizations couple ICT with business models that fit heterogeneous or, sometimes, competing logics. Therefore, we develop a theoretical extension of existing work on IT-enabled business models by suggesting that they are enabled by combinations of institutional logics into distinct logics on the level of value creation networks, e.g. what we coin *network logics*. We draw this insight from an inductive, interpretive case study on business model innovation for treating chronic diseases. Contributions arise in three areas: first, our argument shows that IT-enabled business model innovation for societal challenges is best understood by integrating research on IT-enabled business models with institutional theory. Second, we suggest that the institutional logics literature holds the currency to enhance the idea of “value creation logics”, which is prominent in business model research. Third, our study suggests that information systems research and organization theory need to be further aligned.

**Key Words:** IT-enabled business model innovation, information systems, institutional logics

**INTRODUCTION**

Chronic diseases have become a societal problem of tremendous scope. Their death tolls are nothing short of breath taking as the World Health Organization estimates the share of annual deaths due to chronic diseases to about 90 per cent in nearly every developed country (WHO, 2011). Although the terminology is not fixed, chronic diseases are generally understood as dis-

eases with a long duration and slow progression. Moreover, the progression of chronic diseases is often influenced by complex interdependencies of physiological and non-physiological factors that give rise to further diseases. For instance, diabetes type 2 causes follow-up diseases of various types. Other chronic diseases are cancer, depression or the so-called “chronic obstructive pulmonary disease” (COPD), which often demands long-term ventilation. Cumulatively, chronic diseases thus have devastating effects on the quality of life and effective treatments depend on knowledge-sharing among medical professionals. Against this background, medicals (Blumenthal, 2010, 2012; Mandl & Kohane, 2012), health economists (Busse, Blümel, Scheller-Kreinsen, & Zentner, 2010) and health policy researchers (Buntin, Burke, Hoaglin, & Blumenthal, 2011) alike have agreed that health information technologies hold the potentials to substantially increase the quality of services for the chronically ill. However, scholars also agree that the diffusion of health information technology into medical practice is slow and, often, problematic (Kellermann & Jones, 2013; Lluch & Abadie, 2013).

Leading innovation researchers stress that the diffusion of health information technology demands IT-enabled business models that are adapted to the idiosyncrasies of health care (Hwang & Christensen, 2008). Specifically, it seems important to acknowledge that health care delivery is, oftentimes, not organized as a market (Thomson, Busse, Crivelli, van de Ven, & Van de Voorde, 2013). Thus, business model innovation is brought forth by alliances between states, the medical professions and private sector firms (Crean, 2010; Davey, Brennan, Meenan, & McAdam, 2010; Hwang & Christensen, 2008; Le Ber & Branzei, 2010a, 2010b).

In this paper, we deploy a management information systems lens to understand why it seems to be some difficult to implement IT-enabled business models for treating the chronically

ill. Yet, although our paper is tied to this context, we believe that our answers absolutely apply to other contexts where IT-enabled business models are developed to cope with societal challenges. The rationale is that we suggest a theoretical framing that, in conjunction with our empirical data, allows us to conceptualize the matter on a sufficiently abstract scale. More specifically, our theoretical departure is that most theorizations of IT-enabled business models integrate information systems research with organizational economics (see, e.g., Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). Important work in this domain has shown how information technology relates to organizational capabilities (Drnevich & Croson, 2013; Woodard, Ramasubbu, Tschang, & Sambamurthy, 2013) and how organizations can strategically deploy capabilities to leverage the potentials of information technology to execute business models (Rai, Pavlou, Im, & Du, 2012; Rai & Tang, 2010). Within this latter stream, Rai and Tang (2014) recently theorized two distinct capabilities: dyadic IT-customization and network IT-standardization.

However, applying this perspective to the study of societal challenges underlies several limitations. One of them is the market-focus of the aforementioned works, which makes it difficult to use these theories in non-market contexts. However, several societal challenges like reducing poverty (Seelos & Mair, 2007; Thompson & MacMillan, 2010) or coping with HIV/AIDS (Maguire, Hardy, & Lawrence, 2004) have demanded that firms and non-market actors jointly create novel business models (Dahan, Doh, Oetzel, & Yaziji, 2010). Thus, we extend the work on dyadic IT-customization and network IT-standardization by the recent institutional logics concept (Thornton, Ocasio, & Lounsbury, 2012). The latter has excelled in organization theory due to its strength in explaining how market and non-market logics jointly matter for value creation (Lounsbury, 2007; Marquis & Lounsbury, 2007; Thornton & Ocasio, 2008). Thus, we suggest

that institutional logics also embed the capabilities to execute IT-enabled business models. More specifically, we suggest that developing IT-enabled business models for societal challenges demands combinations of different institutional logics into distinct value creation logics. Moreover, we suggest that these combinations arise on the level of value creation networks, thus we coin them *network logics*. Therefore, these network logics also embed dyadic IT-customization and network IT-standardization.

We draw these insights from an inductive, interpretive case study on IT-enabled business model innovation for treating chronic diseases in Germany. We deliberately chose a case from Germany because its annual death toll due to chronic diseases is very high (92 per cent) (WHO, 2011) and governmental think tanks repeatedly emphasized severe difficulties in the integration of IT into care delivery (SVR, 2009, 2012). Thus, the case occurred to us as a typical case (Yin, 2009) for developing IT-enabled business models for societal challenges. Moreover, we chose to work with inductive methods (i.e., the recent 'Gioia method', see Gioia, Corley, & Hamilton, 2013) because theoretical combinations of IT-enabled business models and institutional theory are scarce. Thus, induction is appropriate to generate theoretical insights that facilitate further refinement (Edmondson & McManus, 2007; Eisenhardt, 1989; Eisenhardt & Graebner, 2007).

Our results emphasize that IT-enabled business models for societal challenges face a paradoxical twist. First and foremost, combinations of institutional logics into distinct logics on the level of the value creation network are needed (what we call “network logics”) in order to facilitate the execution of business models. Moreover, creating these logics demands firms to include important elements from non-market logics into network logics to avoid alienation of the non-market actors, with whom they have to ally. However, while we find enabling effects of network

logics on dyadic IT-customization, we also find constraining effects on network IT-standardization.

Against this background, the contributions of our study are three-fold: First, we deliver an empirical application and extension of Rai and Tang's (2014) recent work. The results corroborate the importance of dyadic IT-customization and network IT-standardization but emphasize their embeddedness into distinct logics. Second, our work suggests that the terminology of "value creation logics" in business model research should be theorized in relation to institutional logics since the latter can give the former very specific shapes. Lastly, our study suggests strengthening the alignment of information systems research with organization theory, which we believe is an important theoretical foundation to understand how ICT can be applied to cope with societal challenges.

## CONCEPTUAL BACKGROUND

### **Business Models and Business Model Innovation**

Business models have become a central theme in management (Arend, 2013; Baden-Fuller & Mangematin, 2013) and information systems research (Rai & Tang, 2014). In their comprehensive review of the business model literature Zott, Amit and Massa (2011) delineate three broad streams of research that relate to this topic. First, scholars interested in e-commerce have pointed out how digitalization changes the ways in which firms organize transactions with customers and suppliers (Amit & Zott, 2001; McPhillips & Merlo, 2008; Rappa, 2001; Timmers, 1998). Second, strategic management scholars have paid particular attention to how digitalization enables firms to arrange patterns of activities and exchange relationships in order to create value (Chesbrough & Rosenbloom, 2002; Teece, 2007; Zott & Amit, 2007, 2008). Third, technology

and innovation management scholars have addressed business models either as mechanisms to commercialize new technologies or pointed out that technological innovation demands business model innovation in the first place (Chesbrough, 2010; Gambardella & McGahan, 2010; Teece, 2010).

Given the breadth of research on business models, it may seem less surprising that no coherent definition of the term “business model” has been established in the literature, although there is a consensus that the term “business models” refers to basic templates of economic activities for generating value (Baden-Fuller & Mangematin, 2013; Perkmann & Spicer, 2010; Zott et al., 2011). In this paper, we adopt Zott and Amit’s (2001: 511) widely cited definition of business models as “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities”. Moreover, scholars across disciplines have come to the agreement that business model innovation, e.g. new ways to absorb inputs from a firm’s environment in order to change its’ business model (Zott et al., 2011: 1033 f.), is a key for a firm’s competitiveness due to the pace of technological changes that ensued in the last decades (Chesbrough, 2010; Gambardella & McGahan, 2010; Johnson, Christensen, & Kagermann, 2008; Teece, 2010; Zott & Amit, 2010).

Research that theorizes this linkage among technological change and business model innovation mostly integrates information systems research with organizational economics (see the recent overview in Bharadwaj et al., 2013). Important contributions have focused e.g. on how information technology enhances organizational competencies for business model innovation (Drnevich & Croson, 2013; Woodard et al., 2013) or on how firms adapt internal processes to changes in industrial structures (Mithas, Tafti, & Mitchell, 2013; Oestreicher-Singer &

Zalmanson, 2013; Zott & Amit, 2008). An important insight of this work is that, due to digitalization, business models are increasingly executed in networks of firms in contrast to the view firms realize business models on their own (Reimers, Johnston, & Klein, 2010; Robey, Ghiyoung, & Wareham, 2008; Teo, Wei, & Benbasat, 2003). As Pagani (2013: 613) notes “The whole value network is underpinned by a particular value creating logic and its application results in particular strategic postures. Adopting a network perspective [...] provides an alternative perspective that is more suited to ‘new economy’ organizations, particularly those where both the supply and demand chain are digitized”.

Rai and Tang (2014) theorize two organizational capabilities to deploy information technologies in order to govern value creation networks (see also Rai & Tang, 2010). The first capability is dyadic IT customization. It refers to defining rules for inter-firm data exchanges that delimit the requirements for the specific information exchanges, the governance of information exchanges as well as the transaction and task structures (Rai et al., 2012). The second capability is labeled network IT standardization. It refers to the capability to integrate modularized resources with information exchange standards in order to establish inter-organizational routines and large-scale data exchanges (Rai et al., 2012; Rai & Tang, 2010, 2014). These works provide important insights on the possibilities to manage IT-resources within and between firms.

However, the integration of information systems research with organizational economics also has important limitations. It focuses on market settings and thus raises important challenges if societal challenges are scrutinized. The rationale is that business models for societal challenges need to be attuned to non-market settings since the institutional rules to solve societal challenges are fundamentally different from market rules. For instance, Seelos and Mair’s (2007) study in

Bangladesh, where markets are largely absent due to extreme poverty, finds that business model innovation for societal challenges demands alliances of for-profit firms and non-profit organizations (see also Thompson & MacMillan, 2010). Similarly, coping with HIV/AIDS demanded pharmaceuticals companies to collaborate with social movements (Maguire et al., 2004). Thus, in these settings, the intra-firm focus in business model research needs to be extended towards inter-organizational focus that addresses non-economic actors in the firm's environment (Dahan et al., 2010).

In medicine, professional organizations often represent such important constituents. Thus, Le Ber and Branzei (2010a, 2010b) show that business model innovation in health care depends on cooperations of firms with medical professions, which hold different conceptions of value than businesses. Therefore, IT-enabled business model innovation in such contexts increasingly depends on cross-sectorial partnerships of businesses and medical professionals (Bloom & Wolcott, 2012; Davey et al., 2010; Davey, Brennan, Meenan, & McAdam, 2011) although these partnerships bring forth value creation logics that may “overlay rational decision making” (Le Ber & Branzei, 2010a: 167). Against this background, we suggest extending the aforementioned approaches to business model innovation by including the idea of a *network logic*; a notion that resemblances the idea of value creation logic but draws on different theoretical foundations.

### **Institutional Logics and Network Logics**

Our idea of network logics is rooted in the concept of institutional logics, which has proliferated in organization theory (see, e.g., Thornton et al., 2012). Conventionally, institutional logics are defined as the “socially constructed, historical patterns of cultural symbols and material practices, including assumptions, values, and beliefs, by which individuals and organizations

provide meaning to their daily activity, organize time and space, and reproduce their lives and experiences” (Thornton et al., 2012: 2).

Although the conceptual roots of this concept lie in neo-institutional organization theory (Friedland & Alford, 1991; Meyer & Rowan, 1977), the former departs from the assumptions of the latter in significant ways (Lounsbury, 2008; Zilber, 2013). First and foremost, whereas earlier works emphasized structural homogeneity among organizations (DiMaggio & Powell, 1983), institutional logics suggest that diversity arises since different organizations draw on different logics (Durand & Jourdan, 2013; Pache & Santos, 2012; Purdy & Gray, 2009). Firms may rely on logics of the market whereas churches draws on religious logics to organize themselves (Friedland & Alford, 1991). Importantly, the professions are also accredited to have distinct logics (Greenwood, Suddaby, & Hinings, 2002; Scott, Ruef, Mendel, & Caronna, 2000; Suddaby & Greenwood, 2005). For instance, within the medical profession, two important logics are based on care or science. The former emphasizes the empathetic engagement of professionals with patients whereas the latter stresses that scientific evidence should guide medical decisions (Dunn & Jones, 2010). Moreover, if private firms begin operations in health care, they will often have to cooperate with the professions (Reay & Hinings, 2005; Reay & Hinings, 2009). Thus, they absorb professional and market logics into their business models (Goodrick & Reay, 2011; Scott et al., 2000). Such fusions of logics are what institutionalists have come to call “hybrid logics” (Battilana & Dorado, 2010; Pache & Santos, 2010). Their design is often a creative process that relies on the agency of the organizations, who absorb these different logics (Thornton & Ocasio, 2008; Tracey, Phillips, & Jarvis, 2011).

To our knowledge, the fields of research on IT-enabled business models and institutional logics lay astray, although some investigations suggest that they are, in principle, compatible. For instance, Gawer and Phillips (2013) show how Intel's implementation of a platform strategy impacted on the industrial structure of the software industry. Garud and colleagues' (Garud, Jain, & Kumaraswamy, 2002) widely influential study in organization theory makes a similar point. They study how Sun Microsystems' strategy to diffuse the Java Standard moved this firm from the periphery to the center of the industry. Studies that originated in information systems research have also utilized institutional theory as explanans. Findings indicate that organizations may strategically shape market categories in order to advance their strategic ends (Pollock & Williams, 2011; Wang & Swanson, 2007). Thus, although not said explicitly, these studies suggest that the firms under scrutiny created distinct value creation logics and appropriated the value, which arose from their operations.

Against this background, we propose first steps for a closer alignment of research on IT-enabled business models and the literature on institutional logics. This combination is particularly important to understand business model innovation for societal challenges since such settings demand firms to cooperate with non-market actors (Maguire et al., 2004) so that these arrangements create distinct features that transcend those of the organizations, which are involved (Lawrence, Hardy, & Phillips, 2002). Therefore, firm-centered arguments like those rooted in organizational economics fall short of grasping these characteristics. Thus, we propose the idea of a network logic, which emerges on the level of the collaboration and embeds organizational capabilities, which are needed to execute IT-enabled business models. We signify the value of our argument by an empirical study of business model innovation for treating chronic diseases.

## EMPIRICAL CONTEXT

To study how IT-enabled-business model innovation can counter societal challenges, we chose the case of an inter-organizational network in German health care, which focuses on treating chronic diseases ('HealthNet'). We deliberately chose this case as Germany has one of the highest death tolls due to chronic diseases in developed countries (WHO, 2011) while governmental think tanks highlight the need but also the severe difficulties in implementing information technologies in health care (SVR, 2009, 2012). Thus, we considered Germany to offer a quite typical case (Yin, 2009) for societal challenges.

### **Short overview of the German health care system**

While the American health care sector is quite liberal (Scott et al., 2000), German health care is a highly regulated. State regulation fixes that every individual has to be insured and how much it has to pay for being insured. Moreover, professional regulation is handled by an organization called the "Physicians Association". It issues licenses to doctors on a regional basis, controls the quantity of medicals in this region and it receives quarterly budgets from the state. The Physicians Association re-allocates them to medicals in every region in order to pay them for every treatment of a patient from the statutory health insurance. In 2000, the law to modernize statutory care delivery legalized integrated care in Germany. Similarly to managed care, integrated care emphasizes that different medical professionals integrate their patient-related knowledge with each other and that they coordinate their individual treatments of a focal patient.

**The case study: HealthNet**

HealthNet is an inter-organizational network in a rural region in Southwest Germany, which focuses mostly on treating chronic diseases. It was founded in January 2006 by a group of medical professionals and a professional service firm (PSF), which supports the implementation of integrated care. The medical professionals and the PSF founded a joint venture, which we call HealthFirm. HealthFirm acts as a network-hub and assists the network members in the creation and maintenance of treatment routines, technology implementation, administrative tasks and public relations of the entire network. In this study, HealthFirm is the focal firm and HealthNet is the network into which it is embedded.

One remarkable aspect is that HealthFirm's ownership is split in unequal parts among the medicals professionals, who own two thirds, and the professional service firm, who owns the remaining third. Thus, the discretion of the latter is limited as the medical professionals hold the final decision making authority regarding all of HealthFirm's substantive decisions. Furthermore, the health insurance organization HealthFund is also important for our study. It provided the initial funding to launch HealthNet and thus plays an important role for the early sequences of our findings. The overall time frame of this study is 2000 until 2011. From 2000 until early 2006, we look at the dynamics the pre-dated HealthNet's founding to disclose strategic intents and their alignment. After 2006, we look at how business model innovation unfolded as process.

HealthNet depends on knowledge sharing in several ways. First, knowledge sharing among medical professionals is central in order to make medical knowledge available to all actors, who treat a patient. Second, knowledge sharing among medical professionals, HealthFund and HealthNet is central since the documentation of medical treatments is the basis to calculate

treatment costs. Third, HealthNet strives to ensure that the suggestions to treat a patient are available to medical professionals at the point of decision making. For these reasons, HealthNet implemented a far-reaching IT infrastructure from summer 2007 on. It connects HealthFirm with the medical professionals in the region. In our results, we emphasize on how dyadic IT-customization and network IT-standardization of this information system unfolded.

## METHODS AND DATA

### Data Sources

To trace out how IT-enabled business model innovation for societal challenges unfolds, we used inductive, interpretive methods and applied them to two data sources, a) archival materials as well as b) semi-structured interviews.

*Archival materials.* Archival materials catered a real-time perspective on how IT-enabled business model innovation unfolded over time. The sources comprise of presentations that were held by HealthNet (56 presentations; 1475 slides; spanning from 2005 until 2012), scientific articles that were written by members of the network and published in applied science journals (36 articles; 536 pages; spanning from 2000 until 2012), reports like Health Net's annual reports (20 reports; 468 pages; spanning from 2007 until 2012) as well as press releases (17 press releases; 49 pages; spanning from 2005 until 2012) and website materials (41 web documents; 146 pages; spanning from 2005 until 2012).

*Interviews.* We did 18 semi-structured interviews with members of HealthNet and the organizations which founded the network (these were carried out mainly in 2011 and one in early 2012). The interviews complemented the archival sources because they offered us even more

specific examples, stories as well as inside views. Since HealthFirm, the joint venture of the medical professionals and the PSF, administers dyadic IT customization and network IT-standardization, we mostly interviewed board members and employees of HealthFirm. At the same time, our comparatively small sample size also relates to the fact that HealthFirm is a tiny venture with 19 employees at the time of our data collection. Moreover, we collected about 80 additional interviews from secondary sources that were published between 2000 and 2012 in order to ensure the validity of the information. These were interviews with various members of HealthNet or the organizations that founded HealthNet.

### **Data Analysis**

**CONSISTENT WITH RECENT SUGGESTIONS FOR INDUCTIVE THEORIZING (GIOIA ET AL., 2013), WE BEGAN BY A FIRST-ORDER ANALYSIS. THIS STEP AIMS AT STRUCTURING THE INFORMATION PROVIDED BY THE DATA IN TWO WAYS: A) FIRST-ORDER CATEGORIES, WHICH ARE HANDS-ON DESCRIPTIONS OF THE INFORMATION AND SHOULD PREFERABLY BY DENOTED BY INFORMANT TERMS; B) FIRST-ORDER CONCEPTS THAT ENCAPSULATE THOSE FIRST-ORDER CATEGORIES, WHICH ARE SIMILAR TO EACH OTHER (GIOIA ET AL., 2013; NAG, CORLEY, & GIOIA, 2007).**

### **APPENDIX**

**TABLE 1** shows examples first-order data that we molded into first-order concepts.

It became clear that the first-order concepts mattered for different periods of this case differently. We ordered them according to their occurrence in HealthNets evolution and then we began seeing the process of business model innovation as it unfolded in the case. Relying on this

sequence, we wrote a roughly hundred page, descriptive narrative of the case history including as many quotes as possible. We sent the narrative to our informants to ensure that they understood our analysis, which is central quality criterion for inductive research (Gioia et al., 2013). We received full approval of the report about four weeks after we had sent it to our informants.

Throughout writing the narrative and discussing it intensively within our research team, we began cycling between data and theory to mold our first-order concepts into second-order themes and aggregates theoretical dimensions (this process is summarized in -----

Insert Figure 1 about here

-----). Given that our research was concerned with IT-enabled business model innovation in health care from early on, a first finding was the idea that a network logic mattered for this case. However, we struggled with relating this finding to existing research on IT-enabled business model innovation. Luckily, this stage of our analysis coincided with the publication of Rai and Tang's (2014) article as *article in advance* at *Information Systems Research*. Their focus on dyadic IT-customization and network IT-standardization provided us with the missing link that allowed us to conceptualize our case on an abstract level as process. -----

Insert Figure 2 about here

**----- SHOWS THIS PROCESS AS IT OCCURRED IN OUR STUDY; FEHLER! VERWEISQUELLE KONNTE NICHT GEFUNDEN WERDEN. IN THE DISCUSSION REFLECTS THIS PROCESS ON A GENERAL LEVEL BEYOND OUR CASE.APPENDIX**

**TABLE 1: R**

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**FINDINGS: IT-ENABLED BUSINESS MODEL INNOVATION IN THE CONTEXT OF TREATING CHRONIC DISEASES – A GROUNDED PROCESS MODEL**

In this section, we show the results of our study. Our main findings revolved around the creation of HealthNet's network logic and its effects on executing the capabilities for business model innovation. Therefore, we proceed in three main steps. First, we show what we consider as HealthNet's network logic. Second, we show how it was created. Third, we dedicate comparatively most space to showing how it affected dyadic IT-customization and network IT-standardization. -----

Insert Figure 2 about here

----- shows the process model, which emerged from our case.

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## Network Logic

HealthNet’s network logic resonates with a concept labeled “Health Gain”. It is widely used in the field of health economics and by the World Health Organization to depict correlations of individual health and economic wealth. As a marketing brochure from HealthNet explains it: “Health Gain means the gain, which a population and the entire society get from a generally improved health status” (Brochure 2012). This logic on the level of the value creation network manifests itself in a set of material and symbolic value propositions.

*Material value propositions.* HealthNet suggests that it rises the quality of health services while it also lowers their costs. In turn, it also suggests that bad medical quality and high costs are positively correlated when patients with chronic diseases are not adequately treated. These value propositions largely resemble HealthNet’s material value propositions as they are related to outcomes, which are directly measurable (e.g. costs and medical indicators) as, for instance, this quote indicates: “[The] goal is to measure and make Health Gain a real experience for patients, health care funds, physicians and therapeutics” (Annual Report 2008).

*Symbolic value proposition.* In conjunction with quantifiable outcomes, HealthNet’s logic embraces important symbolic practices. In almost all of the presentations that we analyzed, statistical language is utilized to proof that HealthNet can live up to its material value propositions.

Instances of such utilization already begin in the early days of the network as in “with the data from the project we have built the basis to perform real analysis for optimization potentials” (Presentation 2007, emphasis added) and Yet, they continue all through the data.

### **Creation of the Network Logic**

HealthNet’s distinct value creation logic was created by combining different institutional logics. As German health care is strongly regulated by the state and the profession, these are mainly elements from a state logic and a professional logic. However, certain market elements are enmeshed within these logics, too. To trace out these logics, we focus on two aspects. Aligning strategic intents and defining B2C customer base.

*Aligning strategic intents.* The network logic resulted from the alignment of the strategic intents of HealthFund, medical professionals, as well as the PSF, who co-founded HealthFirm with the medical professionals. First and foremost, Healthfund’s strategic intent was largely cost containment since certain legal reforms in German health care placed “*high demands for generating economic effects*” on HealthFund. Consequently, its integrated care contracts would be “*evaluated by their economic performance*”.

In contrast, the strategic intent of the medical professionals was serving medical care of the highest quality independent from any industrial interests: “*Altogether, our work embraces constant progress and a lively cooperation among the physicians while being open to new ideas is important, too. These are the best conditions to launch and implement bigger projects successfully*” (Physician interview in 2007). Lastly, the strategic intent of the PSF was contracting with both parties. The statutory health insurance would provide financial resources whereas medical

professionals would perform the medical treatments, which would be reimbursed. Thus, jointly, these actors would realize a business model that none of them alone could.

Two steps ensued to create the network logic. First, the PSF aligned with the medical professionals in a consultancy mandate. Together, they developed an integrated care concept and approached HealthFund in 2004. Second, contract negotiations among these three organizations ensued. Several details from the negotiations indicate how the organizations created the distinct network-level logic by aligning HealthFund's intents with the intents, the medical professionals and the PSF. HealthFund's strategic intent was that HealthNet was ready to assume the full economic responsibility for all insurants of HealthFund in a certain region. Such budgetary responsibilities were important because integrated care could run the risk of so-called risk selection which means that "*care deliverers may select patients to enroll based on the risk (and the potential economic gain)*" (Presentation 2005). HealthFund aimed at avoiding risk selection since one potential hazard could be that care providers de-select patients, who generate the most costs in order to boost their economic performance. Thus, assuming budgetary responsibility for the whole population was crucial for creating the network logic since it "*became part of the contract among HealthNet and HealthFund*". In conjunction, the PSF prepared the medical professionals for the founding of HealthNet via a consultancy mandate beginning in 2004.

***Defining B2C customer base.*** HealthNet defined the customers of the network mainly as patients with chronic conditions. If the suggested correlation between high costs and bad medical quality was true, these patients would be the ones whose treatment costs could be lowered while standards of medical quality could potentially be held constant. Thus, this focus on so-called "high Cost Risks" allowed HealthNet to unify economic efficiency, which was important to

HealthFund, with the importance of medical quality, which was important to the medical professionals, or, as one informant put it: “*Well, it is a fact; HealthNet is basically made for sick people. I mean, in a sense, we profit from making sick people a little healthier*”.

Moreover, the customer relationships would be marked by a shift away from the traditional understanding of patients. Patients “*usually want to be cured [...] but a consciousness for health does not exist*”. Therefore, HealthNet foresaw that physicians would act like coaches that would help patients grow into a more empowered role step by step. The physicians themselves were thus asked to be coaches and doctors at the same time: “*The entrepreneurial model of HealthNet [was to] provide a better guidance to the high risk insurants.*” The twist is that those patients whose diseases are understood as most cost-intensive are commonly considered as patients who suffer from severe diseases such as diabetes type 2 or depression. Hence, HealthFund and the medical professionals would benefit from inhibiting or delaying follow-up diseases since their non-occurrence saves costs and enhances life quality.

### **Effects of the Network Logic on IT-Enabled Business Model Innovation**

As knowledge sharing among medical professionals was instrumental to executing HealthNet’s value propositions, the specification of these propositions into inter-organizational routines for treating patient and using information technology began after HealthFund had signed the contract with HealthNet in early 2006. Later, in summer 2007, HealthNet’s IT-standardization began. In this section, we show that the network logic had ambiguous effects on dyadic IT customization and network IT-standardization.

***Enabling dyadic IT-customization.*** HealthNet’s network logic enabled the formulation of two types of inter-organizational routines: inter-organizational routines for patient treatments (so-

called “health programs”) as well as routines of medical assistants. These routines defined (i) what information would be shared among the members of the network, (ii) the tasks of the organizations within the network as well as (iii) security and privacy levels that related to data exchanges. Therefore, these routines also specified the idiosyncratic requirements of HealthNet’s inter-organizational relations for value creation.

The so-called “health programs” are HealthNet’s offers to the patients; mostly patients with chronic diseases. Each program is a set of inter-organizational treatment routines that applies to treat a certain disease, for instance, heart failure, diabetes or depression. The network logic enabled the formulation of “health programs” since the development began right after HealthFund had signed a letter of intent in late 2005 while *“no efforts in that direction were made before that”*. In turn, in 2006 *“we worked hard to lay the groundwork for our project. We defined the to-dos, whereby, it would be clear that the medical professionals would assume all medical responsibilities [...] We drafted the first health programs and introduced them to the members of the network”* (Archives). Similarly, public presentations from 2006 report that health programs for heart failure, obesity, and several other chronic diseases are currently in the making.

Basically, all health programs were considered to function by the same template: If a potential patient for, perhaps, the heart failure program goes to see a doctor, the doctor’s assistant would be thought to canvass her (him) to enroll in the heart failure program. Once a patient is enrolled, the medical professionals would be asked to follow the protocol prescribed by the specific program. However, the programs were never mandatory for the physicians. Instead, the programs were and still are non-binding guidelines by which individual physicians ideally treat a patient. For instance, one of the first programs was the program to treat heart failure (we label

this program “Healthy Heart”). HealthNet built this program on the national German DEGAM-guideline (“DEGAM” stands for “Deutsche Gesellschaft fuer Allgemeinmedizin” (“German society of general medical practitioners”)) by adapting it to the local contingencies of the region where HealthNet operated. Thus, several specific tasks resulted that defined how medical professionals should handle a patient. One of these tasks was deciding whether a patient should be enrolled in “Healthy Heart”. This decision hinged on two metrics: the left ventricular ejection fraction (LVEF) and the so-called NYHA-value (NYHA-Values quantify the severity of heart failure on an increasing scale from 1 to 4). The LVEF occurs when the pump function of the heart is quantified as below 40 percent, which may imply problems regarding the O<sub>2</sub>-supply to the body. If a patient received such a diagnosis in the preceding 24 months to his (her) consultation with a medical professional, (s)he would be a potential Healthy Heart enrollee.

Furthermore, medical professionals were envisioned to personally consult with a patient in order to assess his (her) NYHA-value. The goal was to define whether a patient’s diagnosis corresponded with either of two different types of heart failure, which HealthNet had derived from the DEGAM-guideline: heart failure for calm and or strained situations (Presentation 2007). Therefore, *“in every single case, physicians do a trustworthy verification and documentation of the NYHA-value”* (Presentation 2007) and would document it in their computer workstations. In line with the goal of the program to reduce hospitalizations, medical professionals were also envisioned to categorize each enrollee either as a patient with *very high* re-hospitalization potentials or with *high* re-hospitalization potentials (Presentation 2007).

The definition of these tasks went along with definitions of which data is circulated within HealthNet. Several presentation slides show how the aforementioned tasks were supposed to re-

late to information systems. The patient groups, which were built according to re-hospitalization potentials, are presented as columns. Inside the columns, the core steps to treat these patients are included and both columns emphasize the importance of information systems for the documentation of medical treatments (Presentation 2007). For instance, these slides show that, besides the LVEF and the NYHA-values, data on the age of a patient, gender, costs two years prior to program enrollment as well as follow-up diseases connected to heart failure (so-called “comorbidities”) and medications were supposed to be documented and tracked in order to measure Health Gain. Thus, the network logic did lay the basis to formulate health programs and thus to engage in dyadic IT-customization.

While the tasks of the medical professionals were focused on medical treatments, HealthFirm’s tasks were defined mainly around the administration of the network and the data analysis. It is important that HealthFirm was not granted any rights to intervene into medical practice or sanction medical professionals if they do not follow the prescriptions of the health programs. As one informant explained, it was very important that the professional autonomy of the medical professionals remained untouched – *“and this is exactly how it was supposed to be”*.

One of HealthFirm’s most important tasks was defined as serving as HealthNet’s network hub. Most importantly, this relates to two areas: (i) acting as the firm, which is the contract partner with health care funds as well as (ii) developing, implementing and maintaining health programs. Regarding the former, HealthFirm is legally entitled to contract with health care funds. More specifically, this means that HealthFirm receives the reimbursement of the entire HealthNet network from health care funds and re-allocates the money within the network. In our study, this arrangement was defined as follows: HealthFirm had contracted with HealthFund and agreed to

assume the budgetary responsibility for all regional insureds of HealthFund. Note that these were not automatically enrolled in HealthNet nor was there any obligation that they would have to. HealthNet would have to promote the health programs to them to get insureds enrolled.

Moreover, HealthFund would calculate the average costs for a population that had the same statistical characteristics as the population in the area where HealthNet operates. If, and only if, the de-facto spending for the population in this region would outperform the calculated average spending, then the savings would be split in equal parts among HealthFund and HealthFirm. The latter would distribute the money among the network members and use it for efforts to establish and maintain the network.

Regarding the development, implementation and maintenance of programs, several employees at HealthFirm were reserved for conceptualizing a program and developing suggestions for the according medical documentation together with HealthNet's medical professionals. Usually, HealthFirm would scan which diseases are particularly prevalent in the region where HealthNet operates. If HealthFirm found an increasing prevalence of a disease, which was not yet covered, it began consulting with medical professionals in order to draft first suggestions of a health program. These drafts were refined through the course of several workshops that included those medical professionals, who would be particularly apt to apply the program as well as project managers from HealthFirm.

HealthFirm's second important group of tasks relates to data analysis. It retrieves the medical documentation data from the medical professionals into a SQL database. From there, it is extracted for a first analysis, format checks and format standardization (usually in an Excel table). Then, it was supposed to run the data analysis together with the consultancy firm, which

owns one third of HealthFirm. The latter firm was supposed to feed HealthFirm's data into a comparative database where this data is grouped with norm data. At this point, the link to the Health Gain logic also becomes clear as the data from the region is juxtaposed to norm data. Data from the region is standardized, analyzed by statistical procedures as well as OLAP-cubes.

***Constraining Network IT-Standardization.*** Standardizing and synchronizing the documentation software of the medical professionals was instrumental to yield the data, which HealthNet needed for its calculation. An initial consensus on software standardization as was found in: *“June 2006: The participating physicians decided upon the synchronization of the praxis information systems”* (Presentation 2007). Thus, HealthNet incentivized network IT-standardization: medical professionals would receive a 12,000 Euros budget for a solo praxis to update their individual information systems and would be asked to practice digital documentation. In the beginning of HealthNet's IT-roll out sources refer to *“29 participating physicians who used 16 different software applications”* (Annual Report 2007). HealthFirm tried to standardize the administrative software, mainly by using the contract that HealthNet had signed with HealthFund as a justification: *“Paragraph eleven of the contract states: ‘Implementation of a [...] centralized patient record, inter-connecting information systems, data transmission’* and, in 2006, HealthNet already predicted network-IT standardization: *“HealthFirm and the medical professionals have already agreed to standardize software to administer patients”* (Scientific Article 2006).

However, as this plan converged towards execution, the standardization process changed its trajectory since several medical professionals wanted to keep the software that they had been using before HealthNet was founded since *“Several physicians already had their programs and*

*liked them; others had a completely old system and generally hated IT. Yet, others loved the idea of a new system. Reaching a consent was severely difficult.*” Consequently, full standardization seemed difficult. Or, in the words of one informant, *“During the first talks about IT standardization, it was pretty quickly clear that there are opponents and doctors who by no means want to change their software applications. [...] This is why we said, ‘Alright, we will never get an entire standardization done. Let’s try 70 per cent’.*” Thus, while technical and syntactic integration was planned (i.e. the use of one software program) semantic and pragmatic integration became important as HealthNet began integrating IT-based processes in an Inter-Organizational Information Systems (IOIS, Reimers et al 2010). More specifically, in 2007, HealthNet did indeed make a step towards standardization since it reduced the initial 16 software application to 6 (Annual Report 2007) with the consensus that *“Agreement – changes of praxis information systems: Beginning with April 1<sup>st</sup>, 2007, 22 doctors’ offices will use the same praxis information system. They will be able to access a joint medical record (the remaining five systems – originally there were 16 – will be adapted to this system)”* (Presentation 2006). The majority of the medical professionals adopted the well-known medical software Turbomed. This change in plans generated six information systems, which had to be inter-linked.

Moreover, contrary to our initial expectation that power would be implemented to streamline information systems, this episode indicates how HealthFirm accepted the endowments of several medical professionals due to its respect for professional autonomy. Thus, the network logic displayed a constraining effect on network IT-standardization because HealthFirm’s standardization plans could not be executed. Nonetheless, having 70 percent of the medical professionals adopt the same software is, by all knowledge of the field, a respectful accomplishment.

Second, however, even this large share of adopters had important consequences on the execution of HealthNet's value propositions. HealthNet needed a further software to enable data exchanges between these six applications and HealthNet's controlling software. Consequentially, several service providers entered the scenario to help in scripting such a system. *“And then we asked ourselves, how do we get it done that all the physicians are inter-connected with each other and to us, even though not all are using the same system? And then the collaboration with a software firm started who offered us an external server solution, which gets installed at every physician's place of practice and is connected to the information system of a physician.”*

However, integrating this mélange of software applications gave rise to an array of interoperability problems, which lasted for several years. Among them were problems like these: (i) crashes of the entire system if one of the aforementioned applications would be updated. This was a crucial problem since HealthNet kept on adding novel health programs to its documentation software. (ii) freezes of the systems as well as (iii) problems related to the appropriate ciphering and transfer of medical data from one system to another.

Another constraining effect of the network logic related to how medical professionals used HealthNet's inter-organizational information system. In this regard, our empirical material mostly relates to documentation practices since quantified proofs of Health Gain demanded standardized data entries by medical professionals into their computer workstations (“semantic standardization”). Medical treatments are usually documented by several abbreviations. For instance, to document heart failure, a physician may not write “heart failure” into the field on his (her) screen but may choose to type in an “h” or another letter. Standardized documentation meant that these abbreviations needed to be standardized with all participating physicians in order

to measure Health Gain. However, the health gain logic included many elements of the professional logic of German medicine, which legitimated idiosyncratic documentation for why standardizing documentation was a major challenge: *“I do not know whether you [addressing the interviewers] have an idea of how differently physicians like to code and just write down things in the patient record.”* The crux for the execution of HealthNet’s value propositions was that non-standardized documentation obstructed measurements of Health Gain since it weakened the potential to formulate statistical proofs. *“Medical professionals usually told us [HealthFirm] ‘The data is saved in my software anyway [...] please retrieve it from there.’ But this was not possible since every physician documents differently.”*

While idiosyncratic documentation was in full effect for about three to four years, Healthnet reacted to it by launching a project to standardize medical documentation in the long run: *“We said, alright we have to come up with new abbreviations in order to know if this and that is typed into the field and whether data can be retrieved and used as a basis for calculation. [...]”* Furthermore, archival sources suggest that this project unfolded incremental success over the years as standardized coding improved step-by-step (Presentation 2012) although even late sources suggest: *“We still need to promote possibilities of electronic documentation since not every participant seems to know about them”* (Scientific Article 2011).

Deviating documentation practices also reinforced the power relations that were rooted in the network logic, e.g. a comparative overweight in professional autonomy. Thus, the medical professionals still have the authority to judge the legitimacy of medical practice: *“If it is about the medical aspect, it is the job of the doctors.”* This participatory organization enabled dyadic IT-customization and, in parts, also network IT-standardization. However, medical autonomy also

constrained network IT-standardization and HealthFirm's policy to not execute any coercion of the medical professionals reinforces the constraining effects of the network logic (with very good reasons). However, granting agency to the physicians was described to us as a core value of the firm, as it is "*based on the philosophy of the venture*" which implies that "*You work with the physicians. Whatever you try to do against them just does not work.*"

## DISCUSSION

In this paper, we have argued that organizational capabilities to execute IT-enabled business model innovation for societal challenges are embedded into what we call "network logics". We suggested that solving societal challenges demands combining multiple institutional logics and that these combinations form network logics on the level of value creation networks. Thus, network logics also embed two capabilities, e.g. dyadic IT-customization and network IT-standardization, that have previously been conceptualized as instrumental to business model innovation. As our study shows, network logics seem to have important implications for executing dyadic IT-customization and network IT-standardization for solving societal challenges. In this section, we elaborate on the core contributions of our study: (i) an empirical application and extension of Rai and Tang's (2014) framework; (ii) the importance to open up the concept of "value creation logics" as well as (iii) strengthening the association of information systems research with organization theory in order to develop theoretical frameworks that address IT-enabled business models for societal challenges.

### **Network logics and IT-enabled business model innovation**

Our study highlights that institutional factors are increasingly relevant for IT-enabled business model innovation for societal challenges. HealthNet operated in a sector that was tightly

regulated by the state and the profession, yet, ways had to be found to deal with chronic diseases. Therefore, HealthNet was a close cooperation among a PSF and medical professionals. A network logic ensued, which combined elements from an efficiency logic inflicted upon HealthNet by state with quality expectation and an emphasis on medical autonomy rooted in the professional logic of German medicine. Thus, this network logic embedded the capabilities to execute dyadic IT-customization and network IT-standardization.

Consistent with our methodology (Gioia et al., 2013), we synthesize our findings into a preliminary model that is subject to further empirical refinement. **Fehler! Verweisquelle konnte nicht gefunden werden.** summarizes this model and highlights the following factors: Social challenges often unfold in settings that are characterized by non-market logics, which need to be included into business models if private firms seek to generate value (Dahan et al., 2010; Seelos & Mair, 2007; Thompson & MacMillan, 2010). From the viewpoint of a focal firm, this means that cooperating with non-market actors is important (Lawrence et al., 2002; Maguire et al., 2004) and that building these ties is the basis to formulate value propositions. Thus, these actors align different institutional logics by formulating network logics, which enable and constrain the capabilities to execute business models. As our study showed, HealthNet was successful in formulating rules for inter-organizational collaboration but it was only possible to formulate these rules after HealthFund had signed the collaboration contract with HealthNet. Thus, the network logic was instrumental in enabling dyadic IT-customization. At the same time, the network logic constrained network wide IT-standardization exactly because it included many elements from the professional logic in German health care. Moreover, as the data shows, once network IT-standardization stumbled, HealthNet began re-consulting the rules for using information technol-

ogy and thus re-activated the execution of dyadic IT-customization. In sum, regardless of such effects, far-reaching inclusion of non-market elements into network logics seems to be central for business model innovation for societal challenges.

Against this background, our study contributes to research on IT-enabled business models in an important way. Our empirical application of Rai and Tang's (2014) shows that our argument supports the importance of dyadic IT customization and network IT-standardization in settings of societal challenges, although we emphasize different factors that affect the execution of these capabilities. In our study, it was not only the strategic intent of the firm that drove how these capabilities were executed. Instead, these capabilities were embedded into a distinct logic on the level of the value creation network (in our study, the so-called "Health Gain" logic). Accordingly, we suggest taking this logic seriously as an explanans of business model innovation for societal challenges. In turn, our study places the focal firm (in our case, HealthFirm) within the context of the HealthNet network. While such inter-organizational linkages are implicit in Rai and Tang's (2014) concept, we suggest that settings of societal challenges may demand stronger theorization of how inter-organizational contexts affect the capabilities for business model innovation.

### **Refining the idea of a value creation logic**

If network logics matter for business model innovation, it seems reasonable to theorize such logics in more depth. The term "logic" is often used in business model-related research; indeed, several scholars even define business models as distinct logics to create and appropriate value (Osterwalder & Pigneur, 2010). However, the notion itself is rarely opened up theoretically. Our study suggests that it should since such logics may include elements from different societal-level logics, which give value creation logics specific shapes (Friedland & Alford, 1991; Spicer

& Sewell, 2010). At HealthNet, these logics were logics of the profession, a state logic and, to small degrees, elements of market-like coordination. Thus, HealthNet's network logic differed significantly from conventional understandings of logics to create and appropriate value. Nonetheless, this shape of HealthNet's network logic mattered significantly for the execution of HealthNet's business model. Thus, we believe that studying societal challenges like coping with chronic diseases provides good opportunities to study how new logics to create and appropriate value increasingly move away from management templates.

### **Strengthening the alignment of information systems research with organization theory**

In 2001, Orlikowski and Barley (2001) published an article in *MIS Quarterly* that highlighted great potentials for integrating information systems research with institutional theory: the former's interest in specific, hands-on micro-level problems would enrich the latter's interest in macro-level patterns. In turn, the latter could corroborate the theoretical foundations of the former. We believe that their postulate is today more important than ever as ICT is recognized as potential solution to several societal challenges. Thus, technology and institutions are moving closer and closer to each other on a daily basis. Yet, cross-fertilization among these camps is still asymmetric. Information systems scholars tend to use concepts from organization theory like structuration theory quite often (see the review in Pozzebon & Pinsonneault, 2005) while organization theorists have used specific technologies mainly as a phenomenon to signify theoretical arguments (Granqvist & Laurila, 2011; Munir & Phillips, 2005). We believe that there are rich potentials to exploit in integrating both disciplines more fully. Our approach to network logics is an important step in this regard because the idea of "logics" is deeply rooted in research on IT-

enabled business models and in institutional theory. Thus, it provides rife grounds for mutual enrichment.

### **Limitations and Future Research**

Although we tried to apply outmost levels of rigor to our study, several important limitations arise. The first revolves around our research design embracing a single-case and interpretive methods, which naturally imply limitations to generalizing from a study. However, we deliberately employed a single-case for two reasons. First, our setting was quite typical for business model innovation for societal challenges. Second, research that combines IT-enabled business models with institutional theory is extremely thin. Thus, there is almost no ground for formulating generalized hypothesis, which can be tested. Therefore, such settings demand us to apply qualitative methods to first trace out concepts that are virulent in these contexts. In our study, these were network logics and the effects of network logics. However, further research could test whether and how these effects occur in other settings.

Another limitation is our focus on German health care. Generalizing from local health care systems is always a crux because their regulation differs substantially over different settings. Therefore, we tried to drive our abstraction to a sufficiently abstract level. While our first-order concepts are fully related to the case, we believe that the aggregate dimensions are not. Network logics can indeed occur in many settings where actors firms with different institutional backgrounds ally. (Lawrence et al., 2002; Seelos & Mair, 2007).

Against this background, future research could unfold in several ways. Given that we used interpretive methods our results are theory-in-the-making. We identified network logics and found indications for their effects. We believe that the saliency of the effects could be elaborated

beyond our focus on enabling and constraining. The specific question that arises is when will the strengths of these effects differ and can one, potentially, outweigh the other. Since this field of research is nascent, we could not address these questions. Yet, they are important to advance the explanatory power of network logics. Accordingly, the logic that we had at hand included elements from a professional logic, a state logic and some market elements. In other non-market settings like emerging markets or cooperations of business with social movements, network logics thus include different elements, which may affect dyadic IT customization and network IT-standardization differently than in our study. A last challenge is to disclose whether the notion of network logics could also be salient in market settings, which is a question that we could not answer since we did not study a case from a market setting.

## CONCLUSION

In this paper, we focused on IT-enabled business model innovation in the context of treating chronic conditions in Germany as a typical case for societal challenges. Our analysis yielded that capabilities to execute IT-enabled business model innovation are embedded into a so-called “network logic”, e.g. a combination of different institutional logics that was established at the level of the value generation network. Our study also showed that the network logic was instrumental to enabling one of these capabilities, e.g. dyadic IT-customization, but constrained the second one, e.g. network IT-standardization. Therefore, our paper contributes in three ways: It provides a better understanding of IT-enabled business model innovation in the context of societal challenges; it suggests to theorize the idea of specific logics within business model-related research more thoroughly and it draws on the complementary usages of the term “logics” in busi-

ness model research and institutional theory as a potential for the future integration of these domains.

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## APPENDIX

TABLE 1: REPRESENTATIVE 1<sup>st</sup>-ORDER DATA

Dimensions, Themes, 1st-Order Concepts and Data	
Second-Order Themes and First-Order Concepts	Representative Data
<i>Aggregate Dimension: Network Logic</i>	
1 Material value propositions	
A. Generating medical benefit	A.1 "Together with the patients, the other local business partners, and the health care funds, we organize a better patient care for the enrollees." (Scientific Article 2006) A.2 "Enrollees who suffer from diabetes receive eye check-ups more often: 46.9 percent compared to 30.3 percent (non-enrollees)." (Presentation 2010)
B. Generating economic efficiency	B.1 "The economic results for HealhNet 2005 - 2008: Contribution margins rose [...] 2006/ early 2007: 38 Euros per capita; late 2007: 64 Euros per capita; 2008: 98 Euros per capita." (Presentation 2010) B.2 "Over all enrollees, this makes up for a gross saving of about 513,000 Euros." (Presentation 2010)
2 Symbolic value proposition	
C. Scientification	C.1 "We use the most current scientific findings for prevention and medical care." (Scientific Article 2000) C. 2 "we need to constantly question the results of our work by analyzing them. Has the intervention really had the intended effect? Has our intervention really contributed to slowing down the progress of a disease, to stabilizing the patient or probably even improving his/her health status? We can only learn and remedy the weaknesses of our concepts if we constantly evaluate and compare data." (Annual Report 2008)
<i>Aggregate Dimension: Creation of network logic</i>	
3 Aligning strategic intents	
D. Economic efficiency imperative	D. 2 "Yeah, the responsibility for the result, it has to be measured. We need numbers". (Interview)

- D. 3 "The problem of many integrated care models is that they like to focus on those patients that are easy to handle and that are interesting cost-wise" (Interview)
- E. Medical quality imperative
- E.1 "Altogether, the work of us medical professionals embraces constant progress and a lively cooperation among the professionals while being open to new ideas is important, too. These are the best conditions to launch and implement bigger projects successfully. (Medical Professional cited in Annual Report 2007)
- E. 2 "To my knowledge, the physicians always wanted to do something different. They always thought: It cannot go on like this, we need to take patient care and the overall health care back into our hands and not let us being directed by the health care funds and the numerous legal changes." (Interview)
- F. Bridging imperatives
- F.1 "HealthNet assumes full budgetary responsibility for this region. Not for some enrollees which they kick out once they do not match our criteria because they are too cost intensive or too ill, but for all insureds here. Otherwise, I would have not signed the contract, but this arrangement, I felt, was a responsible way to do it." (Interview HealthFund)
- F.2 "Which potentials can we exploit by improving the management of emergency as well as acute care? For the side of the funds: Hospital budgets, daily hospitalization expenses, device budgets. For the side of the patient: Outcomes, quality of life, potential loss of working capacity" (Presentation 2005).
- 4 Defining B2C customer base
- G. Focus on patients with chronic diseases
- G.1 "At HealthNet, you really filter-out those patients who have a chronic disease and enroll them in one of the projects". (Interview)
- G.2 "It is a crux, and the sicker the people, the better it is for us. I mean, the easier it is for us, that is logical [...] But it is, of course, bad for the people. We do not want them to be sick since our goal is different. Primarily, it is about maintaining health. There is an anti-smoking program now for the people." (Interview)
- H. Redefining roles of patients and medical professionals
- H. 1 "Life-long controlling and managing of diseases across sectoral borders: preventing negative courses of diseases which can be avoided" (Presentation 2005).
- H.2 "We ask the patient where he wants to be health-wise in five to ten years. In integrated care, he receives a specific plan for reaching these goals. Yet, it is a voluntary decision for the insureds if they want HealthNet to take care of their health care service provision. It is not mandatory". (Medical professional in press interview 2006)

Aggregate theoretical dimension: Effects of network logic

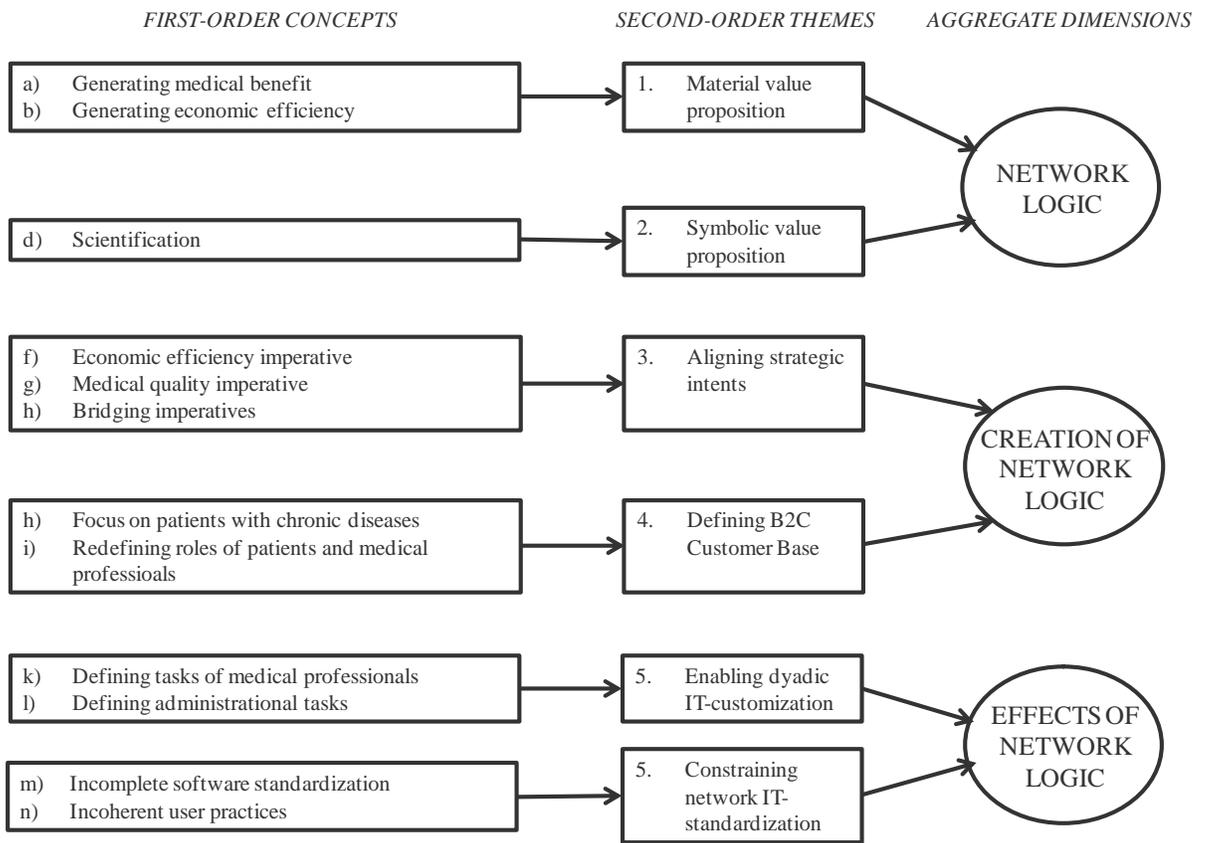
## 4 Enabling dyadic IT-customization

- I. Defining tasks of medical professionals
- I.1 "You enter the parameters of a patient and, when they reach a certain value, then a window pops up that asks the physician to enter a certain value. In the case of the program on back pains, this is a specific questionnaire on the pains of the patients. Once it is completed, the program suggests that the patient has to re-consult the doctor after a specified number of months. Therefore, the doctor knows 'alright, next appointment in this and that number of months'. It is very much like a decision tree where you enter certain information which leads you to the next step". (Interview)
- I.2 Presentations from 2007 show screenshots of a software program that includes the therapy plan, which indicates when the next consultations are due, which material is supposed to be handed to the patient and when, as well as several check-up dates. (Presentation 2007)
- J. Defining administrative tasks
- J.1 "We are currently building a data base. Also, the doctor's office will switch to a shared praxis information system. At the same time, we are building competencies for predictive modeling and data analysis" (Presentation 2006)
- J.2 "HealthFirm has the management competencies to enhance the work of the medical professionals" (Annual Report 2008)

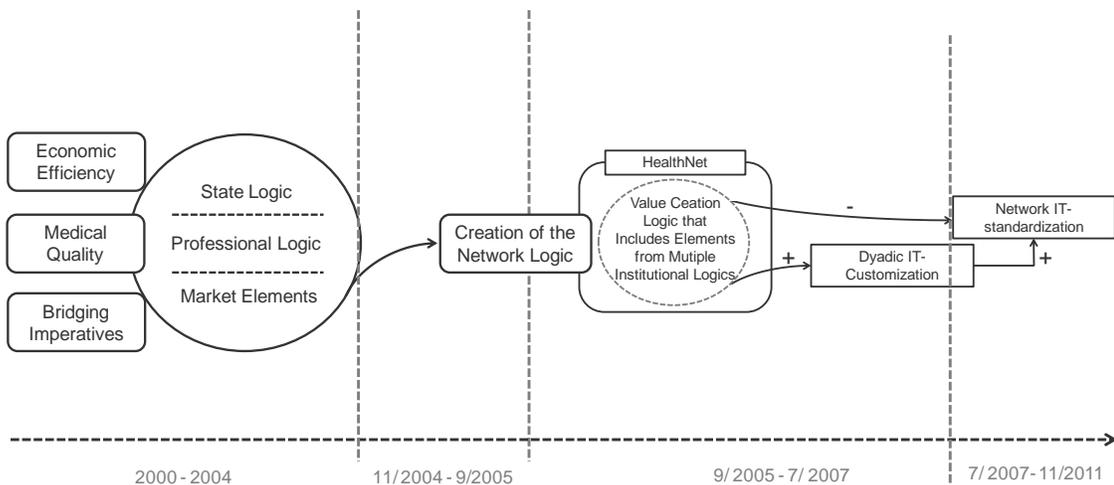
## 5 Constraining network IT-standardization

- K. Incomplete software standardization
- L. 1 "October 2006: First switches of praxis information systems/continued in January and April 2007." (Presentation 2008)
- L.2 "Today we know that, back then, not everybody in the group said, 'Hooray, let's implement a new IT system.' Instead, there were some who said that they had done so much for their IT already that they would not put any additional effort in it." (Interview)
- L. Incoherent user practices
- L.1 "Our first experiences are that the precision of the diagnosis is negatively affected by an individualized 'documentation language' of the physicians, which reduces the gain which HealthNet can generate." (Scientific Article 2011)
- L.2 "This standardization demands major efforts." (Presentation 2012)
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**FIGURE 1: DATA STRUCTURE FOR THE HEALTHNET CASE STUDY**



**FIGURE 2: GROUNDED PROCESS MODEL OF BUSINESS MODEL INNOVATION AS IT EMERGED IN THE HEALTHNET CASE STUDY**



**FIGURE 3: GROUNDED PROCESS MODEL OF NETWORK LOGICS AND BUSINESS MODEL INNOVATION**

