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Institutional types and institutional change in healthcare ecosystems

Oana Maria Pop

Sara Leroi-Werelds

Nadine Roijakkers

Tor W. Andreassen

Abstract

Purpose – The purpose of this paper is to (1) propose a typology of institutions enabling or constraining customer centricity and value co-creation in service ecosystems; (2) illustrate the various types of institutions with examples from healthcare; (3) provide case study evidence on how pharmaceutical companies react to and induce institutional change.

Design/methodology/approach – First, a typology of institutions enabling or constraining customer centricity and value co-creation is proposed and illustrated with examples from healthcare. Next, to clarify how companies deal with these institutions by reacting to or inducing institutional change, two case companies from the pharmaceutical industry are described.

Findings – The research identifies and illustrates nine types of institutions (culture, structure, processes, metrics, language, practices, IP, legislation and general beliefs) grouped by three levels of analysis (micro, meso and macro). Furthermore, the case study findings indicate that companies react to, but also proactively induce, institutional change.

Research limitations – The investigation is limited to two case studies.

Practical implications – Organizations need to (1) understand the micro-, meso-, and macro-level institutions of their service ecosystem; (2) react to institutional changes imposed by other actors; and (3) proactively change institutions by breaking, making, or maintaining them.

Social implications – Pharmaceutical companies can improve patient wellbeing by inducing institutional change.

Originality/value – This research develops a mid-range theory of service ecosystem institutions by developing a typology. This typology is empirically examined in a healthcare context.

Keywords – Service-dominant logic, Service ecosystems, Customer centricity, Institutions

Paper type – Case study

Introduction

Prior research in service-dominant (S-D) logic has emphasized the need to develop mid-range theories in order to bridge the gap between abstract general theories and empirical findings (Brodie and Gustafsson, 2016; Vargo and Lusch, 2016), and thus between theory formulation and verification (Brodie *et al*., 2011). While the purpose of general theories, such as S-D logic, is to explain everything about a general topic, mid-range theories focus on a particular phenomenon or construct in a particular context (Brodie *et al.*, 2011).

Mid-range theories can take different forms (Brodie and Gustafsson, 2016). For instance, recent mid-range theories advanced by S-D logic include the delineation of the conceptual domain of customer engagement (Brodie *et al.*, 2011), the development of a conceptual model of customer engagement marketing (Harmeling *et al*.'s, 2017) and the development of a typology of customer participation (Dong and Sivakumar, 2017).

This paper focuses on the development of a mid-range theory of institutions in service ecosystems by proposing a typology. This typology aims to offer much needed insights into the domain of service ecosystem institutions as well as a refinement of S-D logic as a meta-theory. According to S-D logic, a service ecosystem is "a relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements

and mutual value creation through service exchange" (Vargo and Lusch, 2016, p. 10). This S-D logic perspective of service ecosystems supports (1) customer centricity – i.e., the focus of the ecosystem is on creating value for the customer which ultimately results in value for other ecosystem actors (Shah *et al*., 2006) as well as (2) value co-creation – i.e., the customer has an active role in the service ecosystem (Sharma and Conduit, 2016). These two notions are crucial when investigating institutions in service ecosystems since institutions can enable or constrain interactions and collaborations with customers, which ultimately affects customer centricity and value co-creation within the service ecosystem (Vargo and Lusch, 2016).

Although service ecosystems and the role of institutions in these service ecosystems have been described in recent S-D logic studies (Vargo *et al*., 2015; Vargo and Lusch, 2016) and are deemed important for business practice (Ostrom *et al*., 2015), there is little documented evidence on which *types* of institutions exist, how they manifest themselves in practice and how organizations deal with them (Barile *et al*., 2016). In light of this research gap, *this paper (1) proposes a typology of institutions enabling or constraining customer centricity and value co-creation in service ecosystems; (2) illustrates the various types of institutions with examples from healthcare and (3) provides case study evidence on how two pharmaceutical companies react to and induce institutional change in order to facilitate interactions and collaborations with customers.* Overall, this study contributes to filling a theoretical and empirical gap in this emerging field and helps organizations to recognize and address service ecosystem challenges.

Healthcare represents a relevant context to study service ecosystems since it involves a broad range of actors that can collaborate to create better patient wellbeing (McColl-Kennedy *et al.*, 2012). Potential ecosystem actors include pharmaceutical companies, universities, patients, caregivers (physicians, pharmacists, nurses, family and friends of patients), patient associations, policy makers, external research organizations, supra-national bodies such as the

World Health Organization (Kramer and Pfitzer, 2016; Lowe *et al.*, 2016). Previous studies indicate that a service ecosystem perspective on healthcare can help create better patient experiences (Joiner and Lusch, 2016) and better health outcomes (Frow *et al.*, 2016). Although healthcare ecosystems are receiving increased attention in the service literature (McColl-Kennedy *et al*., 2012; Sharma and Conduit, 2016), empirical research on their institutions is scarce. This is surprising, since institutions can enable or constrain interactions and collaborations with patients, which influences patient centricity and value co-creation, and ultimately patient wellbeing.

Literature Review

Service ecosystems

The term "ecosystem" originated from biology and has been generally defined as "all the living things in an area and the way they affect each other and the environment" (Cambridge dictionary). However, the term has often been used in other disciplines, including marketing, strategy, innovation management, engineering and information technology. Specifically, terms such as "business ecosystem" (Moore, 1993), "organizational ecosystem" (Mars *et al.*, 2012), "innovation ecosystem" (Adner, 2006), "product ecosystem" (Zhou *et al.*, 2011) and "service ecosystem" (Ostrom *et al.*, 2015) are used regularly in academic research and business practice.

Although each of these terms has a specific connotation, they all refer to collaboration between actors (e.g., business ecosystem) or products/services (e.g. product ecosystem). For instance, Moore (1993, p. 76) – who was one of the first to bring the ecosystem approach to management – states that in business ecosystems companies "work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the

next round of innovations". In a similar vein, product ecosystems denote "the consideration of multiple related products in a coherent process, compared with the conventional viewpoint of static, isolated products" (Zhou *et al.*, 2011, p. 43). While most ecosystem research takes a rather firm- or product-centric perspective, recent advances in ecosystem research are evolving to a more customer-centric approach recognizing the active role of the customer (e.g. Piller and West, 2014; Zhou *et al.*, 2011).

This paper follows S-D logic and defines a service ecosystem as "a relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange" (Vargo and Lusch, 2016, p. 10). Given the foundational premises and axioms of S-D logic, such a service ecosystem is inherently customer-centric and supports value co-creation. According to Ng *et al.* (2011) a service ecosystem perspective includes but also extends customer centricity with two major implications. First, customers are part of the service ecosystem and also contribute available resources to the ecosystem to achieve desired outcomes. Second, and related to the first, firms should recognize customers' competence and find ways to employ their competence in the service ecosystem. A service ecosystem thus implies that value co-creation is driven by the collaborative efforts of and interactions between the various actors in the ecosystem, including customers (Ng *et al.*, 2011; Vargo *et al.*, 2015).

Institutions

Based on the work of Scott (2001) and North (1991), Vargo and Lusch (2016) defined institutions as "humanly devised rules, norms, and beliefs that enable and constrain action and make social life predictable and meaningful" (Vargo and Lusch, 2016, p. 11). This definition emphasizes the role of institutions and their power to enable or constrain collaborations and interactions between actors in the service ecosystem. Institutions can come in various forms

such as laws, informal social norms, conventions, symbols, practices, or other guidelines for thinking, evaluating, or behaving. Overall, institutions are "the rules of the game" whereas the ecosystem actors are the “players” (North, 1991; Vargo and Lusch, 2016).

In the academic literature, institutions are described in so-called “institutional theory” (North, 1991; Scott, 2001) which focuses on the relationships between actors and the fields in which they are active (Lawrence and Suddaby, 2006). Institutional theory has served as a guiding theory in organizational research since the 19th century and has especially flourished since the 1970s to become one of the dominant frames guiding organization studies (Thornton *et al.*, 2012). For the purpose of this paper, we do not aim to provide a comprehensive overview of institutional theory. Instead, we focus on insights that add to our understanding of institutions in service ecosystems.

First, the basic function of institutions is to effectively reduce thinking by providing information and acting as signposts (Edquist and Johnson, 1997). Specifically, institutions are employed to create order and reduce uncertainty (North, 1991), while their durability stems from the fact that they can create stable expectations of others’ behavior. Hence, institutions provide cognitive schema, normative guidance, and rules that guide behavior (Scott, 2008).

Second, institutions are instrumental in the cooperation and coordination activities of actors in the service ecosystem. Additionally, institutions (such as property rights and contracts) can manage conflicts between these actors (Vargo and Lusch, 2016).

Third, because institutions simplify rational thinking, there is a potential risk that actors "act without thinking" which can result in ineffective dogmas, principles, beliefs, or dominant logics (Vargo and Lusch, 2016). This implies that the appropriateness of institutions should be reevaluated and even challenged based on the context, but also over time (Barile *et al.*, 2016). For instance, when Vargo and Lusch (2004) proposed S-D logic, they actually challenged the

institutionalized logic of marketing, referred to as goods-dominant logic (Vargo and Lusch, 2016).

Institutional change

Although some initial studies on institutions (e.g., Meyer and Rowan, 1977) consider them as taken-for-granted, the notions of institutional entrepreneurship and institutional work suggest that actors can (pro)actively influence and build institutions (Frow *et al.*, 2016; Vargo and Lusch, 2016). Specifically, actors can induce institutional change by transforming existing institutions or creating new ones (Vargo and Lusch, 2016). DiMaggio (1988) calls these actors "institutional entrepreneurs" whereas Lawrence and Suddaby (2006, p. 215) describe their activity as "institutional work" – i.e., "the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions".

In a similar vein, Koskela-Huotari *et al.* (2016) describe three patterns of institutional change: breaking, making, and maintaining. To change institutions, some of them need to be challenged and broken to make new ones. For instance, if a company wants to collaborate with customers, it has to redefine the roles of customers in the organizational processes (i.e., breaking existing institutions and making new ones) and it can create platforms to interact with them (i.e., making institutions). On the other hand, some institutions have to be maintained. For instance, the company has to adhere to laws that guide company-customer interactions.

A Typology of Institutions

This study proposes a mid-range theory of institutions enabling or constraining interactions and collaborations with customers in service ecosystems. Specifically, this study proposes a typology which is “a conceptually derived interrelated set of types representing forms that

may exist, without necessarily having rules for their classification, including types that may be partly overlapping" (Frow *et al*., 2016, p. 25). This typology is presented in Figure 1 and explained in Table 1.

Figure 1 Institutions and levels of context

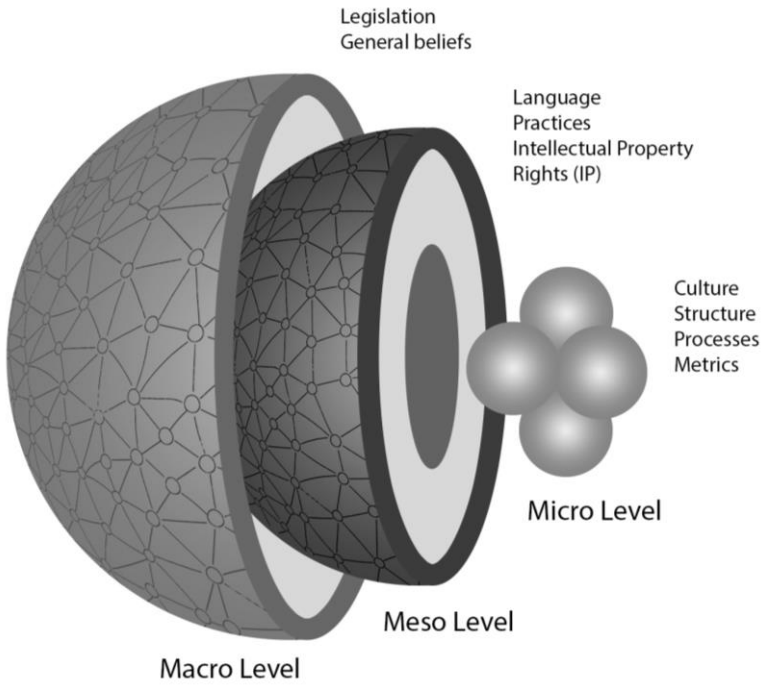

Table 1 Typology of institutions

Level of institutional context	Institution	Description
Micro-level	Culture	Pattern of shared values and beliefs that help understand how an organization functions
	Structure	Anatomy of an organization; contains all functions, departments and links between them
	Processes	Actions whose purpose is to accomplish a pre-established business purpose or objective

	Metrics	Measures to assess organizational performance
Meso-level	Language	Pattern of communication and interaction between parties
	Practices	Routinized activities
	Intellectual property	The legal right to ideas, inventions and creations in the industrial, scientific, literary and artistic fields
Macro-level	Legislation	Formal laws
	General beliefs	Long-held, informal assumptions

The proposed typology starts from three nested levels of context (Chandler and Vargo, 2011; Vargo *et al.*, 2015): the micro-level (e.g., organization), the meso-level (e.g., industry), and the macro-level (e.g., society). These levels are intertwined. For instance, a micro-level institution such as organizational culture reflects meso-level institutions such as industry practices, but also macro-level institutions such as laws and general beliefs. As a result, the actual and potential activities of an actor are influenced by its unique context, which includes micro-, meso-, and macro-levels (Chandler and Vargo, 2011).

At each level, one can discern between several types of institutions (see Table 1). The micro-level institutions exist at the organizational level and the proposed types are applicable to all companies. The relevant meso- and macro-level institutions, however, are industry-specific (Koskela-Huotari *et al.*, 2016) and need to be determined based on the context. This paper focuses on health care, and more specifically on the pharmaceutical industry. This industry represents an interesting research context because pharmaceutical companies are currently transforming from product-centric drug manufacturers to patient-centric healthcare

providers and are engaging patients to co-create value (Champagne *et al*., 2015; Donahue and Simms, 2016).

Micro-level institutions

Micro-level institutions exist at the organizational level and determine how an organization collaborates and interacts with customers. In the academic literature (see Shah *et al.*, 2006) culture, structure, processes and metrics frequently emerge as key enablers or deterrents of customer centricity and value co-creation at the organizational level. Interviews with experts in academia, consulting, life sciences, beauty, IT, telecommunications and logistics support this classification.

Organizational **culture** represents "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provides them with norms for behavior in the firm" (Deshpandé and Webster, 1989, p. 4).

Shah *et al.* (2006) identify three values and beliefs of a customer-centric culture: every decision begins with the customer; employees are customer advocates; marketing is an investment, not a cost. Going one step further, Sharma and Conduit (2016) propose a set of values that facilitate value co-creation: mutual respect, empowerment, and mutual trust. Mutual respect encompasses the belief that the other actor has valuable resources as well as the demonstrated appreciation for these resources. Empowerment relates to the organization's ability to engage customers to contribute and take responsibility for the value outcome. Mutual trust can be defined as having confidence in the other actor's reliability and integrity.

Structure refers to the anatomy of an organization (Dalton *et al.*, 1980) and consists of all formal reporting relationships, including the number of hierarchical levels, managers' span of control, and cross-departmental communication patterns (Daft, 1989). According to Shah *et al.* (2006), a customer-centric organization integrates and aligns its structure (functional

activities and departments) to deliver superior customer value. Such entities are not built around functional silos but rather around cross-departmental collaboration. Moreover, customer-centric organizations have function titles like Chief Customer Officers and Customer Relationship Managers instead of Product Managers and Sales Teams. Additionally, innovation management scholars emphasize the relevance of "structural ambidexterity" – i.e., having flexible functional and cross-functional structures that allow for the simultaneous tackling of incremental and radical innovation projects (De Visser *et al.*, 2010). When initiating and managing service ecosystems, a rigid structure will not support collaboration and co-creation (Hosseini *et al.*, 2017). On the other hand, organizations should have specific functions or departments for collaborating and interacting with other actors, including customers (Dyer *et al.*, 2001; Leroi-Werelds *et al*., 2017).

Processes represent actions intended to accomplish a pre-established business objective (Ray *et al.*, 2004; Porter 1991). Five generic processes are essential for a customer-centric organization (Shah *et al.*, 2006): a strategy development process that focuses on the organization's business strategy as well as its customer strategy; a value creation process that creates value for the organization and for its customers; a multichannel integration process that manages customer relationships via different (but integrated) channels in order to create an outstanding customer experience and present a consistent image to the customer; an information management process to collect, collate, and use customer data, and a performance assessment process to ensure the organization's strategic aims are reached (Payne and Frow, 2005).

To allow for value co-creation, the aforementioned processes should account for collaboration and interaction with other actors (Mortara *et al.*, 2009), including the customer. This implies that: (1) the strategy process should include collaboration with customers as part of the business and customer strategy; (2) the value creation process should emphasize value

co-creation; (3) the multichannel integration process should allow for and encourage two-way communications with customers; (4) the information management process should not passively collect information, but actively engage with customers and learn from them; (5) the performance assessment process should include not only customer-centric performance measures, but also collaborative measures.

Finally, **metrics** refer to measures organizations use to assess their performance. Organizations often develop dashboards with Key Performance Indicators (KPIs) based on their organizational objectives. If an organization strives for customer centricity, it should use customer-centric KPIs since this encourages employees to focus on creating customer value and serving customers instead of on selling products to customers even when they do not need them. Furthermore, it helps managers determine the financial implications of customer-centric decisions (Shah *et al.*, 2006) and track the impact of their investments. The latter is consistent with the perspective that marketing is not a cost but an investment (Strandvik *et al*., 2014) and the notion of Return on Marketing (Rust *et al.*, 2004).

Customer centricity can be measured by means of hard metrics, such as customer lifetime value and customer equity (both expressed in financial terms) or soft metrics, such as customer satisfaction and product quality (based on customer perceptions). A frequently used KPI is the Net Promotor Score (NPS). Although there is some criticism regarding the relationship between NPS and organizational growth (Keiningham *et al.*, 2007), it remains a popular and valuable metric for evaluating customer centricity. The NPS is especially treasured by practitioners since it is simple to understand, well suited to integrate in a marketing dashboard, straightforward to track in real-time and easy to benchmark.

To encourage collaboration and value co-creation, additional KPIs should be used. Potential hard metrics include the number of collaborative projects and co-created ideas, the number of employees involved in collaborative projects, as well as the revenues generated by

the collaboration (Cravens *et al.*, 2000; Michelino *et al.*, 2015). Potential soft metrics include the partner's satisfaction with the collaboration, the level of trust developed among actors, and the actor's intention to collaborate again in the future (Tamoschus *et al.*, 2015).

Meso and macro-level institutions: an industry perspective

While micro-level institutions reside within the organization, meso- and macro-level institutions exist at the industry level and the global/societal level, respectively. Understanding which meso and macro-level institutions are relevant requires a focus on the specific industry (Koskela-Huotari *et al.*, 2016).

In the pharmaceutical industry, language, practices and IP rights are relevant meso-level institutions, whereas legislation and general beliefs are relevant macro-level institutions. We elaborate on each of them by combining insights from the academic literature with industry reports and expert interviews. The industry reports were drawn from international organizations, communities for pharmaceutical executives, rating agencies, patient associations and platforms, and healthcare consultancy firms, whereas the expert interviews included discussions with experts in life sciences.

When interacting and collaborating in a service ecosystem, it is important to use a **language** all actors understand, especially in a rather technical context such as the pharmaceutical industry. To date, several language-related initiatives have been initiated to increase patient participation in the service ecosystem. For instance, the European Patients' Academy on Therapeutic Innovation (EUPATI) is a consortium comprising patient organizations, universities, non-profit organizations, and pharmaceutical companies. EUPATI's mission is twofold. First, it aims to educate patients so they can contribute to the development of new drugs. Second, it aims to improve the user (patient) friendliness of publicly available healthcare information.

Practices can be defined as "routinized activities" (Vargo and Lusch, 2016) and can influence interactions and collaborations with patients. In a recent interview with McKinsey (McKinsey&Company, 2017), David Epstein, former CEO of Novartis Pharmaceuticals and now an executive partner at Flagship Pioneering, summarizes ongoing practices in healthcare as follows:

> "[T]here's enormous waste in the way we do things. You go to a doctor, he or she makes a diagnosis and sends you home, and there's little follow-up until you next return. There has to be a more effective way to monitor people over time. Digital allows that possibility."

Epstein calls for changing industry practices (i.e., institutional change) and states that healthcare efficiency and effectiveness will benefit from customized treatments combined with digital solutions. The latter can take many forms, including digital (video) instead of physical meetings, apps and wearable devices (Champagne *et al.*, 2015). Wearable devices offer physicians the opportunity to continuously monitor patients' health situation, whereas apps can be used to offer information to patients, but also to support interactions between physicians and patients. Furthermore, apps allow patients to send information to physicians, including pictures or videos, which can facilitate diagnosis and monitoring. Overall, digital solutions can be used by pharmaceutical companies to supplement or support their pharmacological therapies. For example, pharmaceutical giant Novartis works together with Google to build a smart eye lens that can help patients with diabetes by continuously monitoring their glucose and insulin levels.

The digital evolution not only provides digital solutions to support monitoring practices, but it also affects communication practices. A recent study by McKinsey (Champagne *et al.*, 2015) indicates that pharmaceutical companies are starting to use digital channels (including apps, communities, social media) to interact with patients, depending on the target audience.

As the pharmaceutical industry relies heavily on Research & Development (R&D), **intellectual property** (**IP)** rights are a crucial meso-level institution. Although IP rights are often debated in healthcare (because of its implications for access to medicines) the protection of IP rights remains important for spurring R&D (McKinsey&Company, 2017). IP management is thus of critical importance when pharmaceutical companies collaborate with other organizations (Leten *et al.*, 2013).

When companies collaborate with customers, however, the situation is slightly different. This relates to the notion of user innovation (von Hippel 2010), which is based on three key principles: users have unique knowledge about their own needs; they create solutions to those needs; and they (often) freely share their results with others. The benefit for these users does not lie in IP rights and selling the innovation, but in using a product or service that meets their needs. In the early stages of user innovation research, the focus was on lead users who innovate autonomously to solve their own needs. Later research, however, focused on knowledge sharing and co-development in user communities (Piller and West, 2014; Oliveira *et al.*, 2012; Canhão *et al.*, 2017). Within such communities, users frequently share their ideas, knowledge and inventions freely with other users and also with companies. Hence, they share their knowledge without request or even expectation of compensation (Piller and West, 2014).

Piller and West (2014) discern between different types of customer-organization collaborative innovation. First, organizations seeking collaboration with customers to enhance products or services do so in a context of privately controlled IP and the motivation of private monetary returns (i.e., to sell the innovation and make a profit). Organizations can foster such innovations by setting up idea contests or building online platforms. Furthermore, companies can provide monetary incentives to customers. The EUPATI project discussed earlier supports patient involvement in the R&D process and stipulates the following about this collaboration:

"Interaction may only proceed on the basis of a written agreement that, at a minimum, spells out the basic elements of the collaboration (e.g., rules of engagement, compliance, intellectual property, financial payments)." Second, users can start from their own personal needs (rather than monetary gains) and seek to share their ideas and inventions to meet those needs, but also to help other people with similar needs. This is fostered by user communities. An example of such a community is www.patient-innovation.com where patients and family members can freely post and share their solutions to specific problems.

At the macro-level, **legislation** is a critical institution affecting interactions and collaborations with patients. According to the World Health Organization (Fefer, 2012) legislation in the healthcare sector is necessary because (1) healthcare concerns the whole population; (2) multiple actors are involved; (3) abuse can lead to serious consequences such as injury or even death; (4) informal controls are insufficient, and; (5) patients cannot easily evaluate the safety or quality of drugs. Two examples of legislation that especially impact pharmaceutical companies' interactions and collaborations with patients relate to *direct-to-consumer advertising* and the *processing of health data.*

Pharmaceutical companies cannot advertise in the same way as manufacturers of regular consumer products do. Although some exaggeration in advertising can be tolerated for consumer products, this is not the case for medicines. As a result, most countries have a clause in their law to regulate this issue (Fefer, 2012). For instance, most European countries forbid advertising prescription medicines directly to patients, whereas it is allowed in the US since 1985. Although there are some pros and cons for direct-to-consumer pharmaceutical advertising (Ventola *et al.,* 2011), the problem is that it is almost impossible to control since a lot of advertising happens via the Internet. Hence, the need to reevaluate institutions and their appropriateness at regular intervals becomes an imperative.

In terms of protecting health data, the EU Parliament changed the legislation (i.e., institutional change) by approving the General Data Protection Regulation (GDPR). The GDPR (enforceable from 25 May 2018) unifies and strengthens data protection for individuals within the EU. For pharmaceutical companies, this institutional change has several implications. First, the GDPR forms a single, pan-European law for data protection. Second, the GDPR applies to all companies offering goods or services to EU citizens or processing personal data of EU citizens regardless of the company's location. Third, large organizations need a Data Protection Officer. Fourth, the conditions for consent have been strengthened, which impacts pharmaceutical companies' clinical trials, but also their interactions with patients. Overall, pharmaceutical organizations needed to review their existing policies, procedures, and practices to guarantee compliance with this new legislation.

General beliefs about the pharma industry affect interactions and collaborations with patients. To establish valuable interactions and relationships, trust is a key factor. Since the reputation of the pharmaceutical industry has been damaged by its business focus (i.e., moneymaking instead of healthcare), dubious marketing practices, pricing issues, and numerous regulatory investigations (Kessel, 2014), trust is a challenging factor for pharma. The 2016 Edelman trust barometer, which is based on an online survey in 28 countries and a total of more than 33,000 respondents, indicates that only 53% of the population trust pharmaceutical companies.

This lack of trust can constrain collaborations and interactions with patients. Hence, the pharmaceutical industry is taking action to build trust [I]. The key word for building trust is "transparency" (Champagne *et al*., 2015). Specifically, there is a general consensus that pharmaceutical companies should disclose details about clinical trials as well as funding [II].

Although a few years ago, disclosing this information was voluntary and thus a sign of goodwill, information disclosure is slowly becoming mandatory for pharmaceutical

companies, and hence, a legal institution. For instance, since 2016 the EMA provides open access to clinical trial data for medicines authorized in the EU. To further support the sharing of clinical trial data, the European Federation of Pharmaceutical Industries and Associations (EFPIA) implemented principles for responsible sharing of clinical trial studies, going beyond the legislative requirements. Additionally, in 2017 EFPIA has committed to disclose information about annual transfers of value to health professionals and healthcare organizations. This relates to activities such as research and educational grants as well as transfers of value to individuals for activities such as speaking at meetings, consultancy and attending advisory boards. Under these EFPIA principles, pharmaceutical companies have dramatically increased the amount of publicly available information, which is in the best interests of patients, healthcare professionals, researchers and pharmaceutical companies.

Methodology

The aforementioned typology (see Figure 1 and Table 1) provides additional insights into which types of institutions exist and how they manifest in practice. In a next step, we investigate how companies can deal with these institutions by reacting to them but also by inducing institutional change (breaking, making, maintaining).

Research design

To explore how companies deal with various types of institutions, two in-depth case studies were investigated. Case study research is especially useful when asking "how" or "why' questions (Gummesson, 2012) and allows researchers to follow an open approach to get an in-depth understanding of complex phenomena such as institutions (Koskela-Huotari *et al.*, 2016). The case selection was purposive (Gentles *et al.*, 2015; Yin, 2014), ensuring that information-rich cases yielding in-depth insights were used. In other words, cases that best

illustrated the phenomenon of interest were selected (Patton, 2002). Case selection was based on three criteria. First, the companies should be active in the pharmaceutical industry. Second, the companies should have invested significant resources in setting up service ecosystems. Third, the companies should be specialized in chronic diseases, implying the necessity of developing trustful, lasting relationships with patients. Based on the aforementioned criteria we gained approval to explore the cases of UCB and Novo Nordisk.

The case companies

UCB is a mid-sized multinational pharmaceutical company founded in 1928 and headquartered in Brussels. Its focus is on creating value for patients living with neurology and immunology conditions while its therapy areas include: epilepsy, Parkinson's disease, restless legs syndrome, osteoporosis, lupus, Crohn and arthritis. The company's slogan: "Inspired by patients, driven by science", signals a patient-centric mission. This mission was introduced by the new CEO (Jean-Christophe Tellier) in 2015.

Novo Nordisk is a large multinational pharmaceutical company, founded in 1923 and headquartered in Bagsværd, Denmark. Its mission "Changing diabetes" reveals the company's primary focus. This is complemented by research on hemophilia, growth hormone disorders, obesity, and hormone replacement. Patient centricity and value co-creation are central values to the company and stem from Novo Nordisk's history and operations.

Data sources

We conducted semi-structured interviews with key informants to understand the companies' approach to managing institutions and institutional change. The profile of the respondents was diverse (see Table 2). Furthermore, we participated in a workshop about patient centricity and

patient collaboration at both companies. Finally, we examined the companies' websites and annual reports.

Table 2 Data sources used in the case study analyses

Data Source	Description/ Code	Area of expertise
UCB Pharma	Interviewee U1	Multichannel Operations
	Interviewee U2	Marketing
	Interviewee U3	Multichannel Marketing
	Interviewee U4	Compliance, Awareness and Prevention
	Interviewee U5	Immunology
	Interviewee U6	Talent Solutions
	Interviewee U7	Patient Value Solutions
	Workshop	Various profiles
	Annual reports	-
	Company website	-
Novo Nordisk	Interviewee N1	Communications
	Interviewee N2	Business Assurance
	Interviewee N3	Patient Relations
	Interviewee N4	Corporate Sustainability
	Workshop	Various profiles
	Annual reports	-
	Company website	-

Data analysis

The interview transcripts and other written materials were analyzed using an open coding approach (Strauss and Corbin, 1998) in NVivo 10. The codes included the types of institutions (Table 1) as well as the approach taken to change them (making/ breaking or maintaining represent the institutional change patterns in our study). For example, we first

looked for evidence on how "culture" (a micro-level institution) manifests within the two companies; next, we added granularity by coding for how (and if) the existing culture is made/ broken or maintained. Additionally, we coded for general information about the case companies and about the pharmaceutical industry and carried out a word-for-word content analysis of all information obtained. As the coding required sensitivity to both detail and context, two researchers independently carried out this task and discussed overlaps or inconsistencies.

Case Study Findings

This section illustrates the typology of institutions (see Table 1) with relevant examples from UCB and Novo Nordisk. Following Siggelkow (2007), we used citations for increased transparency and depth. It should be noted that the list of illustrations is not intended to be exhaustive. Rather, the objective is to illustrate how institutions can affect customer centricity and value co-creation in a specific setting and how organizations deal with institutions or even induce institutional change to facilitate interactions and collaborations with customers/patients (see Table 3 for key patterns).

Table 3 Case study findings

Case company	Institution	Institutional change	Key pattern
UCB	Culture	Transformation to a patient-centric culture through the initiation of the Patient Value Strategy y the new CEO in 2015.	Breaking/making
	Structure	The structure of the company has completely been redrawn and special units and functions were created to interact and collaborate with patients.	Breaking/making
	Processes	Investments in multichannel integration processes to encourage	Making

		two-way information streams between the company and patients.	
	Metrics	In line with the new Patient Value Strategy, the value for patients is included as a new metric.	Making
	Language	Membership EUPATI to develop a common vocabulary between patients, caregivers, policymakers, pharmaceutical companies and other actors.	Making
	Practices	Creating programs as well as digital platforms for patients and physicians to build knowledge that goes beyond the disease but focuses on the patient's overall wellbeing. For example: Epilepsy Advocate	Breaking/Making
	Intellectual property	Transformation from a closed company (creating IP internally or acquiring it from other companies) to a more open and collaborative company (whereby IP is jointly created and used).	Breaking/Making
	Legislation	Adhere to GDPR	Maintaining
		Change legislation via research initiatives to create better value for patients. For example: the Report Cards Project	Breaking/Making
	General beliefs	Member of EFPIA	Maintaining
		Enhance reputation by living and breathing the Patient Value Strategy by means of events such as the International Epilepsy Day, creating interactive material with patient stories, creating a non-stop helpline, and organizing hackathons.	Breaking/Making
Novo Nordisk	Culture	Patient centricity and value co-creation are supported by the Novo Nordisk way.	Maintaining

Structure	The existing structure is kept but improved to facilitate patient interactions and collaborations.	Maintaining
Processes	Creation of disease panels to promote two-way communications.	Making
Metrics	Performance is evaluated against the Novo Nordisk Way.	Maintaining
Language	Membership EUPATI to develop a common vocabulary between patients, caregivers, policymakers, pharmaceutical companies and other actors.	Making
Practices	Creating programs as well as digital platforms for patients and physicians to build knowledge that goes beyond the disease but focuses on the patient's overall wellbeing. For example: TalkDiabetes	Breaking/Making
	Change industry-wide practices regarding the industry's effect on climate change.	Breaking/Making
Intellectual property	IP management - and sometimes lack of formal IP - paves the way for collaboration. While patents are still deemed important for R&D, the Novo Nordisk Way and its Triple Bottom Line resulted in an open and collaborative approach for R&D.	Maintaining
Legislation	Adhere to GDPR	Maintaining
	Work with local actors to implement adequate measures to prevent chronic diseases.	Breaking/Making
General beliefs	Member of EFPIA	Maintaining
	Promote responsible and ethical business practices and provides funding to independent, non-profit organizations such as the World Diabetes Foundation (WDF).	Breaking/making

Managing micro-level institutions

Managing culture

At UCB, the transformation to a (more) patient-centric culture was initiated through the Patient Value Strategy (introduced by the new CEO in 2015). This strategy comprises four elements: (1) "From Noise to Signal" implies that employees should distinguish signals among the noise (abundance of data, for example); (2) "From Task To Value" indicates that employees must acknowledge how their tasks create patient value; (3) "Space With Consistency" means that employees should strive for an organization that gives space for development, execution, and idea generation; (4) "Helpfulness and Generosity" implies that employees should support teamwork, build empathy, and exhibit generosity.

Consistent with the theoretical work of Shah *et al.* (2006), we found that leadership commitment is critical for the cultural shift at UCB. In fact, the close involvement of the CEO appears to be the engine of change:

> I think with the change where Jean-Christophe came in and took over after Roch Doliveux, we had a big culture shift from more the numbers, the facts, the processes, to a truly patient focused organization. (Source: U6)

Alongside the four patient centricity guidelines, UCB nurtures a set of cultural values fostering patient centricity and value co-creation. Specifically, UCB emphasizes the importance of listening to patients and engaging them in order to deliver the right care for the right individual. Finally, UCB's strategy explicitly shows appreciation for "patient groups who provide valuable services to patient communities and understand what matters to people living with severe diseases" (Source: Company website, 2017). For example, UCB invests in engaging patients through events such as Hack Epilepsy, where multiple actors including developers, designers, digital experts, and patients think about new ways for applying digital

technologies to improve the lives of the epilepsy community. UCB also emphasizes mutual trust in relationships with patients, by valuing the right solutions more than market share or a dominant position:

> We do not aspire to gain a huge market share or to take the market or to have a dominant position, but to provide the right solution to the right patient and [to] be recognized as a true partner and a value-generating partner. (Source: U5)

At Novo Nordisk, patient centricity and value co-creation are supported by The Novo Nordisk Way. Formerly known (before 2011) as the Novo Nordisk Way of Management – i.e., the way in which Novo Nordisk *managers* were expected to act, The Novo Nordisk Way today guides all employees' behavior in two ways. First, it describes Novo Nordisk's ambition to strengthen its leadership in diabetes, the focus on developing medicines and making them accessible to patients, the aspiration to make a difference, the focus on quality and business ethics, and the company's business philosophy balancing financial, social and environmental responsibilities (the so-called Triple Bottom Line). Second, it offers 10 essentials for daily employee behavior including: (1) "We create value by having a patient-centered business approach" and (5) "We build and maintain good relationships with our stakeholders".

The co-creative nature of Novo Nordisk's culture is indicated by the following statements about collaborating with patients based on respect, empowerment, and trust.

> To be able to address the needs of the patient we have to have very big ears; being very aware and almost having a higher purpose. (Source: N2)

> The core thing is that there is trust and that they understand that we are completely transparent in everything we do. You cannot work with a patient organization with a one-sided agenda. (Source: N3)

Managing structure

The two companies changed the organizational structure to support patient centricity and collaborations with patients. At UCB this change is radical and involves a complete makeover (the classic organizational chart became a cycle), while at Novo Nordisk the existing structure is improved to accommodate changing collaboration patterns.

UCB's approach to upgrading the organizational structure involved redrawing it completely. This favored the creation of specific structures intended to effectively collaborate with patients and other actors (i.e., Patient Value Units, Patient Value Practices, Patient Value Operations and Patient Value Functions). The act of breaking down old barriers and silos in which "marketing was doing marketing, sales and commercial were doing sales, and medical was doing medical" (Source: U5), however, was not an easy task. In fact, the reorganization also led to double work and less clarity.

> The organization is very scattered and sometimes people in the Missions do something I am working on. (Source: U1)

> In a way we could work a lot more on sharing individuals' capabilities, building on the strengths of the people, and then compensating each other where we know that we may have, I would not say a weakness, but where we are not that strong. (Source: U6)

In terms of structure, Novo Nordisk supports value co-creation by having specific departments and functions in place. Today, the Corporate Stakeholder Engagement

Department is responsible for engaging with various actors, such as NGOs, the National Health Service, healthcare professionals, and patients. Furthermore, the Patient Relations Department focuses on involving patients' key opinion leaders and patient associations in the R&D process. Finally, Novo Nordisk champions cross-departmental collaboration and concentrates on the exploitation of existing assets and knowledge.

> We also work very much with other functions. I would argue that one of our finest qualities is [the ability] to tap into existing structures, whether it's management teams or communication lines. (Source: N4)

Managing processes

Redesigning processes to support patient centricity and value co-creation receives significant attention within both companies. Guided by its patient-centric culture, UCB recognizes the strategy development and value creation processes as products of collaboration. Patients' input is treated as a key insight, one that benefits patients but also the organization. Additionally, UCB invests in improving its multichannel integration processes to encourage two-way information streams and also designed an information management process that facilitates learning. However, these processes are mainly directed at healthcare professionals and not directly at patients. For example, the Neureca platform as explained below:

> Neureca is a website that we have in five languages for the biggest five countries, that has medical information on there, mainly non-branded. It also has other functionalities like a quiz, like product information in some countries […] To make all that happen, different components need to be in place. (Source: U1)

While Neureca is directed at healthcare professionals, UCB also invests in facilitating two-way communications with patients. For instance UCB launched UCBCares™ , a 24/7 helpline for both healthcare professionals and patients to address their questions or concerns about UCB products. Furthermore, the feedback received during these interactions is used to improve products and treatments.

At Novo Nordisk the strategy development and value creation process are also rooted in the organizational culture. Following the essentials of the Novo Nordisk Way, value co-creation is a priority. To enact this priority, Novo Nordisk creates disease expert panels within certain therapy areas and continuously promotes two-way communication. The latter reveals the company's approach to multichannel integration, as described by one of the respondents:

> Trying to target stakeholders who we find very important to have good relations with, and trying to identify either their information needs or some tools that can provide them some utility. One of those groups is patients. I primarily engage with them via digital channels: social media accounts, web-based accounts. (Source: N1)

Novo Nordisk also developed DAWN (Diabetes Attitudes, Wishes and Needs), a study meant to reduce the burden of diabetes by interviewing patients and family members, nurses, dieticians, and specialists about the psychosocial challenges of the disease. DAWN also provides dialogue tools that help healthcare professionals educate and treat people with diabetes. Finally, Novo Nordisk refined its multichannel and information management processes via a recent collaboration with IBM Watson Health to create diabetes solutions built on the Watson Health Cloud [III]. The agreement combines Novo Nordisk's understanding of diabetes with IBM's expertise in cognitive computing:

> Working with ambitious partners like IBM Watson Health helps us explore the opportunities presented by an increasingly digitalized healthcare system. We aim to leverage our combined capabilities to improve the lives of people with diabetes by making the management of the condition more simple, effective and measurable. (Source: Annual report 2015)

Managing metrics

Metrics represent the final type of micro-level institutions. In both companies the changes have been incremental and are designed to highlight the returns on investing in patient centricity and value co-creation.

UCB developed several metrics intended to reflect the success (or failure) of collaboration. Hard measures include the results of profit sharing agreements and the intensity and duration of collaborations. In terms of soft metrics, the company reports the results of sentiment analysis and several engagement metrics. Uniquely, UCB has created performance metrics in collaboration with patients:

> We had to pioneer how to set up a dashboard, which measures value for patients. (…) What we actually did was that we worked with patients to discern what they see as valuable. (Source: U2)

In similar vein, Novo Nordisk uses both hard and soft measures to evaluate its performance. The hard metrics include the number of patients that reach out to and rely on Novo Nordisk's diabetes products. Soft measures capture patients' attitudes towards the organization, and company reputation is measured annually using the RepTrak® methodology. However, Novo Nordisk also evaluates performance by means of their values, or the so-called Novo Nordisk Way:

> We have a group of extremely senior people called the Facilitators. Once every 2 years they go out to each unit and they measure how the unit has performed against the Novo Nordisk Way. (Source: N2)

Due to its size, a unique performance measure used by Novo Nordisk is the Access to Medicine Index (ATMI), which evaluates research-based pharmaceutical companies on how they make their medicines and diagnostics accessible in low- and middle-income countries.

Managing meso-level institutions

Managing language

Developing a common language represents an important aspect of collaborating with patients. To this end, both case companies are members of the aforementioned EUPATI consortium, where developing a common vocabulary between patients, caregivers, policymakers, pharmaceutical companies and other actors is a key priority.

> The project [EUPATI] is about getting the patients' voice into medicine development. […] There are a lot of constituents there. One is that we have an encyclopedia that is possible to understand by the layman. […] It is not product specific, it is not therapy specific, disease specific at all. (Source: N3)

Managing practices

Both companies are supporting changing healthcare practices, but are also trying to induce institutional change to better support patient centricity and value co-creation. UCB tries to communicate with patients through various channels and continuously improves it social listening skills. It tries to bring "the voice of the patient into its teams" (Source: U3) by tapping into insights from telephone calls, newsletters, webinars, social media and online

platforms. The insights obtained via these channels enable UCB to draw patient disease journeys, which facilitates further discussions and interactions between actors. To date, a number of programs have been created to facilitate communication and better health outcomes.

> You can create really nice programs linking patients with physicians and starting from communication aspects, from fears and beliefs, building an education that goes beyond disease. [That is] more into the qualitative component of the interaction. (Source: U5)

UCB also uses digital solutions to better support healthcare practices. For instance, Epilepsy Advocate is an online community of people living with epilepsy, their family members as well as their caregivers. UCB created this community to inform, support as well as engage patients and other actors. Additionally, UCB tries to support physician's practices by offering webinars, workshops, but also tools. For instance, the aforementioned DAWN project provides dialogue tools that supports healthcare professionals addressing patients' psychological needs.

In a similar vein, Novo Nordisk supports physicians' practices. TalkDiabetes, for instance, is a website that provides physicians information and resources to support discussions about unmet needs and the daily challenges of living with diabetes. Novo Nordisk also established and sponsors the Haemophilia Academy, an annual educational event run by international experts in haematology – i.e., a branch of medicine focusing on blood disorders. The aim is to educate and support young haematologists. Given the scarcity of hemophilia specialists in developing countries, the initiative is paving the way for improved patient outcomes.

Novo Nordisk furthermore wants to change industry-wide practices regarding the industry's effect on climate change. To this end, Novo Nordisk partnered with five other

companies (AstraZeneca, Baxter, GlaxoSmithKline, Johnson & Johnson, Pfizer) as well as with the National Health Service Sustainable Development Unit (a unit supporting the national healthcare system in England). In 2012 the group published the first international guidelines for calculating the carbon footprint of pharmaceuticals and medical devices.

Managing intellectual property (IP)

At UCB, changes in IP management are in line with their transformation from a closed company (creating IP internally or acquiring it from other companies) to a more open and collaborative company (whereby IP is jointly created and used). For instance, UCB and Dermira, a private company focusing on the development and commercialization of new therapies in dermatology, entered into a strategic collaboration to broaden patient access to Cimzia® (certolizumab pegol). By helping more patients suffering from psoriasis (a common, chronic, inflammatory disorder with primary involvement of the skin) gain access to the drug, the IP agreement paved the way for improved care. UCB is also gradually embracing open innovation to find new and improved medicines and treatments; for example, though the Technology Platform Access Program (TPAP), which allows partners to access UCB's state-of-the-art technology and collaborate with the R&D department to discover new drugs. Finally, UCB encourages user innovation through hackathons, a time-constrained gathering where various actors (designers, IT specialists, patients, healthcare professionals, etc.) collaborate to come with new healthcare solutions.

At Novo Nordisk, IP management skills - and sometimes lack of formal IP - paves the way for collaboration. While patents are still deemed important for R&D, the Novo Nordisk Way and its Triple Bottom Line create new perspectives. For example, the company neither engages in patenting activities in least developed low-income countries, nor enforces patents in these countries. Furthermore, Novo Nordisk recognizes that healthcare emergencies can

require exceptions to IP rights. In other words, the company pursues an open and collaborative approach for their R&D. Additionally, Novo Nordisk is actively looking for research collaborations with academia and biotech companies, licensing opportunities, co-development as well as global commercialization partnerships. Finally, Novo Nordisk collaborates with various partners to improve society as a whole. The Cities Changing Diabetes is founded by Novo Nordisk, University College London and the Steno Diabetes Center, and builds on private-public partnerships between business, policy makers, architects, healthcare professionals, academics, and other actors. Within this arrangement, all actors work together to create the urban spaces that help people live more healthy lives.

Novo Nordisk also celebrates patient-entrepreneurs though initiatives and awards like the Lyfebulb-Novo Nordisk Innovation Award [IV]. According to Senior Vice President for Novo Nordisk Device R&D Kenneth Strømdahl: "The growing prevalence of diabetes makes the need for disruptive innovation in the way we manage diabetes more relevant than ever. By engaging with patient-entrepreneurs, in the role of innovators; we hope to advance breakthroughs in patient-centered innovation that may impact millions of patients." [II]

Managing macro-level institutions

Legislation

While micro and meso-level institutions are, by their nature, closer to companies' daily realities and hence easier to manage or change, dealing with macro-level institutions in healthcare requires a different skillset. To comply with the aforementioned GDPR, UCB adopted a new set of privacy compliance standards called Binding Corporate Rules. These provide guidelines to ensure legal obligations and public expectations are met. At Novo Nordisk, whose centralized systems track and audit interactions with patients, the GDPR requires a system update:

> And then certainly, when we do engage with patients, for example what I do in my work with user testing, there are also very strict rules around can we keep any data or personal information related to that patient? Can the agency, if we need to use one, can they keep that information? How long can we keep that information for? Where can we store it? etc. (Source: N1)

While both companies adhere to existing regulations, changing regulations is also an option. UCB, for example, not only complies with legal institutions, but also tries to change them via research initiatives meant to create a better patient value as well as a better policy. An example is the Report Cards Project, winner of the Eyeforpharma's Most Valuable Patient Initiative or Service Award in 2016. The project was a response to the high hospitalizations of epilepsy patients and the fact that 30% of these patients were not in control of their seizures. The project's implementation not only led to the reduction of hospitalization rates for epilepsy patients but also provided policymakers with insights into the states where legislative change was needed most (Chandler, 2015).

In similar vein, Novo Nordisk addresses the direct advertising issue – i.e., direct advertising of chronic disease medication to patients is permitted in the US, but illegal in Europe, by adapting its global activities to local regulations:

> In some countries the affiliate works very closely with diabetes educators, [to help patients] manage a chronic disease. In other countries, we are not able to get that close and then the work might be through the patient organization in that market. (Source: N1)

Novo Nordisk also designs country-level interventions and works with local actors to implement adequate measures – including policy change.

> When you look at the targets for reducing mortality rates due to chronic diseases we are trying to find out what would it take on a country basis to make interventions that would prevent people from dying prematurely. (Source: N4)

General beliefs

Both UCB and Novo Nordisk are an EFPIA-member and thus disclose information based on their principles (which is more than legally required). UCB even provides clinical trial data on their company website, including summaries in lay terms and definitions of concepts so patients (or other individuals) can better understand what happened. Furthermore, UCB tries to enhance their reputation by living and breathing its Patient Value Strategy by means of events such as the International Epilepsy Day, creating interactive material with patient stories, creating a non-stop helpline, and stimulating open innovation (e.g. via hackathons). However, UCB still struggles with the reputation of the industry. In the words of one respondent:

> Our industry is not known as a very trustworthy industry. We are overcoming obstacles that were not necessarily created by us. (Source: U3)

Novo Nordisk also addresses general beliefs in different ways and the company is often included in international rankings such as the 2016 RepTrak listing, where it came 3rd. The RepTrak listing identifies the most reputable pharma companies among the UK general public and offers an overview of these companies contribution to society. To change general beliefs, Novo Nordisk actively promotes responsible and ethical business practices (see previous example on the carbon footprint) and provides funding to independent, non-profit organizations such as the World Diabetes Foundation (WDF). The WDF supports prevention

and treatment of diabetes in low- and middle-income countries through funding of sustainable projects. Similar to UCB, however, Novo Nordisk still struggles with the industry's image:

> Another aspect would be the sentiment of the patients towards pharma which is: they have mixed feelings because patients think large pharma organizations are there to keep them unhealthy and restrict their access to medicine and then of course there is the other feeling where patients trust the organization to deliver the best possible solution and to give them better health outcomes. (Source N1)

Conclusion

The aim of this paper was to (1) propose a typology of institutions enabling or constraining customer centricity and value co-creation in service ecosystems; (2) illustrate the various types of institutions with examples from healthcare; (3) provide case study evidence on how pharmaceutical companies react to and induce institutional change. This paper provides several theoretical as well as managerial implications.

Theoretical implications

This study contributes to the literature on service ecosystems by developing a mid-range theory of institutions within service ecosystems as advanced by S-D logic. Specifically, this study proposes a typology of institutions enabling or constraining customer centricity and value co-creation (see Figure 1 and Table 1). By proposing a typology of institutions, this study contributes to filling a theoretical gap in this emerging field. Specifically, service ecosystems and institutions have been conceptualized and described in recent S-D logic studies (Vargo and Lusch, 2016), but there is little documented evidence on which types of institutions exist and how they manifest themselves in practice (Barile *et al*., 2016). By proposing a typology of institutions, we try to fill this gap.

This paper also adds to our knowledge on the nested levels of a service ecosystem context. Specifically, the typology and case study descriptions illustrate institutions at three levels: within a company (micro-level), within an industry (meso-level), or at a global/societal level (macro-level). Furthermore, the findings of our case study research clearly demonstrate how these levels are intertwined and how institutional change at one level can induce institutional change at other levels. For instance, the digital evolution of healthcare practices (i.e. meso-level) implies that pharmaceutical companies can use digital channels to communicate to and interact with patients (i.e. micro-level), while taking into account data protection legislation (i.e. macro-level).

Additionally, this paper adds to our knowledge on institutional change by investigating how companies deal with micro-, meso-, and macro-level institutions. The findings indicate that service ecosystem actors can deal with institutional change in a reactive as well as a proactive way. The former refers to the fact that institutional change can be induced by other actors, such as the government, and that companies have to conform to this (e.g., the GDPR). On the other hand, companies can proactively induce institutional change. Specifically, this study shows how companies can break, make, or maintain institutions in order to facilitate interactions and collaborations with customers. By illustrating how UCB and Novo Nordisk deal with micro-, meso-, and macro-level institutions, the findings of this paper support previous research (e.g., Barile *et al*., 2016; Vargo and Lusch 2016) suggesting that institutions should not be taken-for-granted and ecosystem actors can induce institutional change and consequently shape interactions and collaborations in the service ecosystem.

Managerial implications

The findings of this research yield relevant insights for practitioners. Specifically, the case study findings illustrate the relevance of (1) understanding institutions (2) reacting to institutional change and (3) proactively inducing institutional change.

First, if companies want to interact and collaborate with customers in their service ecosystem, they have to understand the institutions that enable or hamper these interactions and collaborations. Specifically, organizations need to consider these institutions at three nested but interrelated levels: micro, meso, and macro. For instance, our case study findings show that general beliefs (i.e., a macro level institution) hamper interactions with patients because they don't trust pharmaceutical companies. For these companies it is crucial to understand the sources of this distrust and take this into account when interacting with patients.

Second, besides understanding institutions, companies should also conform or adjust to institutional changes imposed by other actors in the service ecosystem. The introduction of the GDPR, which is imposed by the government, is an excellent example. Companies react to this macro-level institutional change, resulting in institutional changes at the micro-level, such as changing processes (e.g. changing information management processes) and a changing structure (e.g. appointing a Data Protection Officer).

Third, companies should not only react to institutional change imposed by other actors, but they should also induce institutional change themselves in order to facilitate interactions and collaborations with customers. In particular, the findings of our case studies emphasize three patterns of institutional change: breaking, making, and maintaining institutions. For instance, while Novo Nordisk built on its existing Novo Nordisk Way (i.e., maintaining a micro-level institution), UCB transformed its organizational culture (i.e., breaking and making a micro-level institution) to facilitate interactions and collaborations with patients.

Specifically, it introduced the Patient Value Strategy which emphasizes patient centricity and patient collaborations. Furthermore, both companies created digital platforms (e.g., Epilepsy Advocate; TalkDiabetes) to facilitate company-patient interactions (i.e., making meso-level institutions) and are trying to change legislation via research initiatives meant to create a better patient value as well as a better policy (i.e., breaking/making a macro-level institution).

Limitations and future research

Several limitations of this study suggest opportunities for further research. First, our research focused on healthcare and pharmaceutical companies. Research in other industries is encouraged, since it can refine and possibly extend our typology. Second, future studies could investigate the specific capabilities service ecosystem actors need in order to manage institutional change. A third limitation relates to identifying relevant institutions from healthcare. Although this study included an extensive investigation of several sources, we do not suggest that the listing of institutions is exhaustive. Fourth, this study focused on pharmaceutical companies and how they deal with healthcare ecosystem institutions. Future research could investigate other actors in this ecosystem (e.g. hospitals, patient organizations, research institutes, etc.) to examine how various actors in the same healthcare ecosystem deal with the same institutions. Fifth, while institutions in themselves are context-specific, general lessons may be drawn from studying how companies manage different types of institutions across different industry sectors. Thus, future studies could use scales and maturity models to enable cross-industry comparison.

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Notes

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