# CO-EVOLUTION OF INSTITUTIONAL COMPLEXITY AND MULTINATIONAL ENTERPRISE

## Transformation of Pharmaceutical Industry

Anna Karhu

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ABSTRACT

This thesis explored changes in the international business (IB) environment as a co-evolution of institutional complexity and multinational enterprises (MNEs). Institutional complexity refers to the often contradictory and overlapping pressures from the business environment that require a response from an MNE. Co-evolution, on the other hand, refers to a perspective that views changes in the business environment arising from the interaction of two or more jointly evolving entities, the institutional complexity and the MNE in this study. The interaction of MNE and its environment has been the focus of the MNE embeddedness studies. Earlier research on this has focused on understanding the influences of the multiple contexts of MNEs and the types of responses MNEs have in the form of strategies and structures. Although we have gained valuable insights from earlier studies, we need to understand further the complexity of changes in the business environment. Thus, this study focuses on the interplay between MNEs and institutional complexity.

This study concentrates on industry-level changes and their linkages to global and organisational developments. Empirically, the study focuses on the transformation of the pharmaceutical industry. The industry has emerged from a simple craftsmanship business into a high-technology industry dominated by MNEs with a global presence. As a highly institutionalised environment, the pharmaceutical industry offers an interesting context for studying contextual complexity on an industry level. The pharmaceutical industry is strongly regulated at nearly all levels of operations, limiting companies' legitimate strategic options. In addition, this industry has relatively stable structures and well-defined actors. Therefore, it can be viewed as a mature sector, offering a different context for study compared with more traditional institutional studies in IB focusing on emerging markets where regulative institutions are usually underdeveloped.

This study applied a multi-methodological approach by triangulating three methodologies. First, stemming from the need to understand change at multiple levels, the study applied a historical research approach to study past events and identify change trajectories of institutional complexity. Second, to exexplorehe variety of institutional complexity, the thesis applied a qualitative comparative analysis focused on the present characteristics of institutional complexity at the industry level. Third, to investigate institutional change as a co-evolution in multiple

related industries, the thesis applied futures research tools and aims to further understand the different elements of institutional change.

As its main theoretical contribution, this study presents a co-evolutionary model of institutional change building from the interaction between changing institutional complexity and MNEs. The findings illustrate that in this co-evolutionary process, the varieties of institutional complexity offer different types of opportunities for agency. This brings forward a more integrated view of institutional change. Furthermore, the study extends the current knowledge on the embeddedness of MNEs and provides further analytical tools to enrich contextuality in IB studies. The study also has important implications for managers and policymakers, enabling them to make more informed decisions and to navigate complex institutional environments better.

KEYWORDS: Institutional logics, pharmaceutical industry, multinational enterprise, industrial development, institutional complexity, co-evolution, institutional change

TIIVISTELMÄ

Tämä väitöskirjatutkimus tarkastelee kansainvälisen liiketoimintaympäristön muutoksia institutionaalisen kompleksisuuden ja monikansallisen yrityksen yhteiskehityksenä muuttuvan lääketeollisuuden kontekstissa. Institutionaalinen kompleksisuus viittaa usein ristiriitaisiin ja päällekkäisiin liiketoimintaympäristöstä nouseviin paineisiin. Yhteisevoluutio puolestaan viittaa näkökulmaan, jonka mukaan muutos johtuu sekä liiketoimintaympäristön paineiden kehityksestä että monikansallisten yritysten aktiivisesta toiminnasta. Aiemmat tutkimukset monikansallisten yritysten sitoutumisesta ympäristöönsä ovat keskittyneet ymmärtämään eri kansallisten kontekstien vaikutuksia näihin organisaatioihin ja siihen, millaisia reaktioita monikansallisilla yhtiöillä on liiketoimintaympäristön luomiin paineisiin niin strategioiden kuin rakenteiden muodossa. Vaikka olemme saaneet arvokasta tietoa aikaisemmista tutkimuksista, on tarpeen ymmärtää paremmin liiketoimintaympäristön muutoksen kompleksisuutta. Näin ollen tämän väitöskirjatutkimuksen tavoitteena on ymmärtää paremmin institutionaalisen kompleksisuuden ja monikansallisten yritysten dynamiikkaa.

Tässä tutkimuksessa keskitytään toimialatason muutoksiin ja näiden muutosten yhteyksiin globaalin ja organisaatiotason kehitykseen. Tutkimuksen empiirinen konteksti on lääketeollisuuden muutos. Lääketeollisuus on kehittynyt perinteisestä käsityötaitoalasta globaaliksi korkeanteknologian teollisuudenalaksi. Tätä alaa hallitsevat monikansalliset yritykset globaalien arvoketjujen verkossa. Lääketeollisuus erittäin institutionalisoituneena ympäristönä tarjoaa mielenkiintoisen tutkimuskohteen kontekstuaalisen kompleksisuuden tutkimiseen teollisuudenalan tasolla. Lääketeollisuus on vahvasti säänneltyä lähes kaikilla toiminnan tasoilla rajoittaen yritysten strategisia vaihtoehtoja. Lisäksi tällä toimialalla on melko vakaat rakenteet ja selkeästi määritellyt toimijat, ja siksi sitä voidaan pitää täysin kehittyneenä sektorina. Täten se tarjoaa erilaisen kontekstin tutkia instituutioiden ja monikansallisten yritysten vuorovaikutusta verrattuna perinteisempiin tutkimusasetelmiin, joissa usein keskitytään vertailemaan kehittyvien ja kehittyneiden markkinoiden institutionaalista ympäristöä. Kehittyvissä maissa sääntely on usein alikehittynyttä verrattuna kehittyneisiin maihin.

Tutkimus hyödyntää monimenetelmällistä lähestymistapaa, jossa tutkittavaa ilmiötä tarkastellaan kolmen eri metodologian avulla. Ensinnäkin tutkimuksen tavoitteena on ymmärtää muutosta useilla tasoilla, joten tutkimuksessa sovelletaan

historiallisen tutkimuksen lähestymistapaa menneiden tapahtumien tarkasteluun ja institutionaalisen kompleksisuuden muutospolkujen tunnistamiseen. Toiseksi, ymmärtääksemme institutionaalisen kompleksisuuden vaihtelua, hyödynnetään kvalitatiivista vertailevaa analyysiä (Qualitative comparative analysis), joka keskittyy toimialan tasolla institutionaalisen kompleksisuuden nykyisiin ominaisuuksiin. Kolmanneksi, tarkastellaan institutionaalisen kompleksisuuden kehittymistä tulevaisuudentutkimuksen työkaluja hyödyntäen pyrkien ymmärtämään paremmin institutionaalista muutosta toisiinsa liittyvinä kehityspolkuina.

Keskeisenä teoreettisena kontribuutiona tämä tutkimus luo yhteisevolutiivisen institutionaalisen muutoksen mallin, joka rakentuu muuttuvan institutionaalisen kompleksisuuden ja monikansallisten yritysten vuorovaikutuksesta. Tulokset osoittavat, että tässä yhteisevoluutioprosessissa institutionaalisen kompleksisuuden vaihtelut tarjoavat erilaisia toimijuuden mahdollisuuksia. Näin tämä tutkimus kehittää integroidumpaa näkemystä institutionaalisesta muutoksesta. Lisäksi tutkimus kontribuoi osaltaan kansainvälisten liiketoiminnan tutkimuksen kontekstuaalisuuden syventämiseen hyödyntämällä eri tutkimusmenetelmiä. Tutkimus antaa myös työkaluja johtajille ja päättäjille kehittää tiedostavampaa päätöksentekoa ja navigoida paremmin kompleksisessa institutionaalisessa ympäristössä.

ASIASANAT: Institutionaalinen kompleksisuus, monikansallinen yritys, lääketeollisuus, yhteisevoluutio, institutionaalinen logiikka, institutionaalinen muutos

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There is a saying that the journey is more important than the destination. When pondering the importance of journey versus destination, an additional perspective is given by acknowledging the company you travel with—people that have enabled the journey to the destination. Thus, now as I am arriving at my destination, I would like to express my gratitude to those who have accompanied me throughout my dissertation journey.

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# Table of Contents

## Tables

## Figures

# List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

I      Anna Karhu. Co-evolution of a MNE and institutional environment – focus on institutional logics change. *Business History*, 2022; 64(7): 1319–1345.

II     Anna Karhu and Majid Aleem. Exploring multiple institutional configurations of an attractive investment environment using fuzzy-set QCA. *Journal of Business Research*, submitted.

III    Anna Karhu. Futures of pharmaceutical industry: co-evolution of science and technology, healthcare, and health. *Futures*, in review process.

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# 1 Introduction

## 1.1 Institutionally Embedded Multinational Enterprise

The multinational enterprises (MNEs) operate in a continuously changing, complex, volatile global economy. To survive and prosper in this turbulent world, MNEs have developed numerous strategies to cope with these diverse environments (Bozonelos & Tsagdis, 2023; Hitt, 2016; Mudambi & Swift, 2011; Oliver, 1991). MNEs are special types of organisations that are networked by their structure and multiply embedded in different national environments (Dunning & Lundan, 2008b, pp. 5–6; Ghoshal & Bartlett, 1990). The networked structure refers both to the internal relations between different organisational units, such as headquarters and subsidiaries, and external relations with suppliers, customers and other stakeholders (Ghoshal & Bartlett, 1990). Thus, MNEs are both internally and externally embedded in multiple national environments.

MNE embeddedness focuses on understanding the interconnections between an MNE and its locations (home or host). Therefore, embeddedness refers to the social, cultural, political, and cognitive structuration of decisions in economic contexts (Beckert, 2003). The idea of business embeddedness has challenged the neoclassical economic assumptions of firms as self-interested economic actors (Heidenreich, 2012). In IB studies, this discussion revolves around the embeddedness of an MNE in its multiple environments. This means that MNEs are seen as balancing the embeddedness of the global structure through their international operations and the national structures through their home and host countries (Heidenreich, 2012; Phelps, 2000). These studies have focused, on the one hand, on understanding the internal management of knowledge flows from its different units to generate a unique competitive advantage. On the other hand, the focus has been on contextual differences to understand the challenges generated by different contexts. Thus, firms' environments, ranging from cultural to more formal national levels and international agreements, have been central when studying MNEs. These studies have generated a substantial body of research to understand MNEs.

This embeddedness has been approached from four general conceptual bases: the transaction cost and internalisation approach, which focuses on politically

induced imperfections in market access and input markets; the network approach, which focuses on the embeddedness in external business networks; the resource-based and micro-political approaches focused on the use of external competencies as resources in inter-firm relations; and institutional approaches, which are focused on embeddedness in national and regional institutional structures (Heidenreich, 2012). This study takes the institutional perspective to study the interaction of MNE and the environment.

Institutional perspectives have been increasingly applied in international business (IB) studies to understand further the complex environments in which MNEs operate. In early research on the influences of the institutional environment, firms were considered more as passively conforming to surrounding institutions than as active agencies that shape the institutional context (see Battilana, 2006 for an extensive discussion). In more recent research, this perspective has been challenged by examining the role of individuals, firms, and other organisations in shaping institutions (Currie & Spyridonidis, 2016; Leca et al., 2008; Leca & Naccache, 2006; Nell et al., 2015). Institutional economics defines institutions as 'humanly devised constraints' or 'the rules of the game in a society' (North, 1990, p. 3). These institutions can be divided into formal and informal constraints (North, 1990). Formal constraints are the written rules or constraints (e.g. laws, regulations, constitutions, contracts, property rights, and formal agreements), and informal constraints are typically unwritten but are socially shared rules and constraints (e.g. common values, cognitions, beliefs, traditions, customs, sanctions, and norms of behaviour that are often expected or taken for granted) (North, 1990). Thus, the term institutions differ from organisations (e.g., governments, international organisations, non-governmental organisations) though used synonymously with standard terms in everyday use.

Three main disciplines can be identified from which the institutional approaches stem from: economics, sociology, and political science (Aguilera & Grøgaard, 2019). All three approaches are applied in IB studies (Aguilera & Grøgaard, 2019; Hotho & Pedersen, 2012). Institutional economics originates from economics (North, 1990; Williamson, 2000); neo-institutional theory, from organisation studies (DiMaggio & Powell, 1983; Scott, 2001); and comparative institutionalism, from political science and sociology (Hotho & Saka-Helmhout, 2017; Whitley, 1999). Table 1 summarises these perspectives. From the economic perspective, the most notable is the work of North (1991;1990) from which the widely used definition of institutions as rules of the game originates. North's (1990) approach stems from the notion of inefficiency of the economic systems and focuses on the formal and informal constraints and enforcement of institutions. From sociology, the works of DiMaggio and Powell (1983) and Scott (2001) provide strong bases for the notion of similarity in organising particular activities in very different contexts. Here the focus is on mechanisms of isomorphism and legitimacy, and on the identification of regulative, normative, and

cultural/cognitive institutions (Scott, 2001). The political science approaches include the works of Whitley (1999) on comparative capitalism and historical institutionalism (e.g. Pierson, 1995; Thelen, 2003). From these perspectives, the focus has been on wider society-related institutional structures of state systems.

**Table 1.**   Perspectives on Institutionally Embedded MNE.

| *Discipline* | **Economics** | **Sociology** | | **Political science** |
|---|---|---|---|---|
| *Institutional approach* | New institutional economics | Neo-institutional theory | Institutional logics | Comparative capitalism and historical institutionalism |
| *Selected authors* | North (1990, 1991) | DiMaggio & Powell (1983), Scott (2001, 2008) | Friedland & Alford (1991), Thornton et al. (2013) | Whitley (1999) and Thelen (1999), Pierson (1995) |
| *Core question* | Why are economic institutions inefficient? | Why are specific organisations similar across contexts? | | How do institutional systems work? |
| *Institutions defined as* | Rules of the game | Socially constructed meaning-making systems | Interrelated system of multiple logics | Rule systems |
| *Selected studies in IB* | Dunning & Lundan (2008); Brandl, Moore, Meyer & Doh (2022) | Tashman, Marano & Kostova (2019) | Marano & Kostova (2016); Röell, Arndt & Kumar (2022) | Witt & Jackson (2016) |

The mentioned economics and sociology approaches share a similar categorisation of institutions according to the nature of the institutional constraint/element from more visible and formal regulation to more tacit, informal, and more difficult to identify characteristics. North's terms into formal and informal constraints and Scott's categorisation into regulative, normative, and cultural/cognitive pillars of institutions. This type of categorization is widely used to describe institutions. Another approach from sociology, institutional logics (Friedland & Alford, 1991), offers an alternative way of categorising institutions not based on their characteristics but on their function. Thus, the institutional logics perspective views society as an inter-institutional system consisting of multiple institutional logics at interplay, forming a system of multiple games with their rules (Thornton & Ocasio, 2008). These different types of logics can have different formulations at different levels and include different types of institutions from formal to informal. This conceptualisation of society as an interinstitutional system provides an alternative perspective to study institutional change as it identifies

multiple institutional logics at interplay. Therefore, to further understand the complexity of MNE embeddedness this study applied the institutional logics perspective to overcome the more traditional view of homogenous national institutional environments.

These earlier studies have generated valuable knowledge on the interplay between MNEs and their institutional environment. However, in addition to understanding how individual organisations respond and are influenced by their environment, it is necessary to understand the interactions of change in wider settings such as an industry or nation, that is to understand the embeddedness of an MNE. This study focused on industry-level change and on the linkages of these changes to global and organisational developments. The empirical context of the study will focus on the transformation of the pharmaceutical industry, which has emerged from a very basic craftsmanship type of sector into MNEs dominated by a highly sophisticated global industry. The pharmaceutical industry as a highly institutionalised environment offers an interesting context for studying contextual complexity on a systemic level. The pharmaceutical industry is strongly regulated at nearly all levels of operations limiting the legitimate strategy options for companies. In addition, this industry has rather stable structures and well-defined actors and therefore can be viewed as a mature sector, offering a context for study different from the more traditional institutional studies in IB that focus on emerging markets in which regulative institutions are usually underdeveloped.

## 1.2 Pharmaceutical Industry Development into a Global Business

The pharmaceutical industry refers to the public and private companies that discover, develop and manufacture drugs and pharmaceutical products, as well as organizations such as government agencies that regulate, provide licences and enforce the operations of pharmaceutical companies and products (Smith, 2016). The pharmaceutical industry can be considered to operate at the heart of our welfare societies owing to three characteristics. First, the industry is heavily built on scientific and technological developments that have been driving the growth in modern economies for the past century. Secondly, the industry is one of the sectors that has enabled the development of our welfare societies by directly influencing populations' health and by indirectly enabling, on its par the advancements of medical care. Third, it has grown from making relatively simple plant-based extracts in a craftsman type of profession of individual healers, pharmacists, and physicians to a highly specialised and corporate-driven global industry. This tremendous development has taken place over the past hundred years and transformed the pharmaceutical market into what it is today (Smith, 2016; Wang, 2009).

The first characteristic ties the industry strongly to scientific and technological development (Howells et al., 2008). The development of the pharmaceutical industry is based on what we know, for example, about pharmaceutical compounds, physiology, pathogens, diseases, and illnesses and of methods of treating those (Wang, 2009). The modern pharmaceutical industry has developed through four identified eras starting with industrialization that took place during the 19th to 20th centuries (Hansén, 1981). This period was building on the development of the production of synthetic chemicals on an industrial scale. The second era of golden ages followed the two World Wars as the variety and magnitude of pharmaceutical production increased. Medicines such as insulin, vaccinations and antibiotics originated from these periods. The third period, drug lag, refers to the increasing competition that pushed the R&D efforts of companies and the growth of regulations and standards, both increasing costs for the companies. The fourth period, new pharmaceutical products, began at the turn of 1970s and 1980s, and refers to the emergence of new technological and scientific knowledge related to IT and gene technology. Thus, modern pharmaceutical products are extremely sophisticated and require specific skills to produce. Moreover, the evolution of healthcare systems and the evolving trends of illnesses and diseases have given rise to a market that is comparatively more decentralised than other sectors that require extensive research and development and marketing efforts (Malerba & Orsenigo, 2015).

The second specific characteristic relates to the role of the pharmaceutical industry as a part of our welfare society. The pharmaceutical industry is pressured by both economic drivers and welfare needs. To balance these needs, the industry faces high levels of regulations (Wang, 2009). These regulations, whether national or regional, constrain and enforce pharmaceuticals as substances and products, and the organising of the supply chain and purchasing, pricing, and usage of the products. Owing to these regulations, the market logic of the industry is somewhat different from the traditional supplier-customer relationship (Taylor, 2016). The industry consists of a wide variety of actors, including consumers, profit-seeking firms, regulatory agencies, universities, research centers, political bodies, and strong professional groups such as medical doctors and pharmacists. These actors are motivated by different aims and values and are diverse in the ways they pursue these aims or face challenges, and how they are organized and operate ((Malerba & Orsenigo, 2015; Taylor, 2016).

The third characteristic refers to the strong position of MNEs within the industry. The industry was built on a strong tradition of independent pharmacists that both prepared the medicines and sold the medicines. These medicines were relatively simple products in comparison to our modern medicines, and might not be considered pharmaceutical products today such as toothpaste or hair gel. However, the products also included painkillers and antiparasitics. The well-known global pharmaceutical producers date back to the early years of the industry. For example,

Merck was established in Germany as a pharmacy in 1668 and developed into a pharmaceutical company in 1827; Pfizer was established in the United States in 1849; and Roche, in Switzerland in 1896. Although the top global companies have sustained their position almost from the industry's inception and are recognised by the public, their market share has been lower than 10%, and only more recently the current largest firm has been able to grow larger than this threshold, mainly through mergers and acquisitions (Malerba & Orsenigo, 2015; Taylor, 2016).

The pharmaceutical sector can be considered a mature sector with well-defined actors and hierarchies, although the structure and positions of the actors may vary in different nations and transnational regions (Taylor, 2016). The increasingly more complex and expensive medicines, combined with increasing regulations and decreasing government budgets have severely hit the sector by decreasing profits, lengthening the time to get new medicines to market, and cutting the amount of new medicines introduced to markets (Malerba & Orsenigo, 2015). In addition, the end of multiple patents for Big Pharma companies has consumed the revenues of these companies; at the same time, the probabilities for making new blockbuster drugs with worldwide high sales figures have decreased (Taylor, 2016). Thus, the pharmaceutical sector has reached a point where the prevailing system no longer supports the growth of the industry, and the companies are exploring new ways to be successful and drive for profits.

The more recent COVID-19 (coronavirus disease) pandemic and escalating international relations have highlighted the fragility of global value chains. The pharmaceutical industry is highly global and develops through interconnected production. This fragility has been seen as a challenge in the availability of medicines and revealed strong dependencies on specific pharmaceutical substances that are produced globally on single production sites (The Economist Group, 2021). These challenges have given rise to further demands from state actors to safeguard the production of necessary medication, putting pressure on pharmaceutical companies to rethink their value chains.

The pharmaceutical sector has a consensus on how the industry developed to what it is today and is anticipating a change. This future change will be at the crossroads of the scientific developments boosted by the opportunities brought by artificial intelligence, the demand for more personalised medicines for knowledgeable consumers, the declining government budgets and the increasing of private money covering the costs of healthcare. These disruptive changes will influence the whole industry and require structural changes not only changes of strategies of individual organisations. These types of expectations are present in many industries owing to the global developments in politics towards a more protectionist era, environmental crisis-caused pressures, and the vast expectations and fears related to digitalisation.

These new dynamics challenge the traditional model of linear thinking, control, and predictability and call for more organic and non-linear thinking, as we experience more limited control and a restricted ability to predict. This draws attention to the interplay between a firm and its environment, especially to the co-evolutionary nature of development. As the pharmaceutical industry operates at the intersection of science and technology advancements, state-run healthcare systems, and globally spread value chains, understanding the interdependencies of the developments of these different spheres is crucial for understanding change in IB environments (Almudi & Fatas-Villafranca, 2021).

## 1.3 Theoretical Positioning of the Study

In IB studies institutions have long been considered an important background factor (Dunning & Lundan, 2008; Jackson & Deeg, 2008, 2019). In the 1990s, economic changes took place and new markets from Asia and Eastern Europe entered the global economy, presenting a very different operational environment for MNEs. These developments turned the interest in IB studies to institutional theory (Tihanyi et al., 2012). Institutional theory offered a framework to study the taken-for-granted characteristics of an international business environment. The influences of institutions on MNEs have been studied from different perspectives: effects on investment mode choice (e.g. Ang et al., 2015; Dikova & van Witteloostuijn, 2007), effects on investors international strategy (e.g. Meyer & Peng, 2005; Peng et al., 2008), effects on MNE's performance (e.g. Li & Yue, 2008), effects on FDI inflows between countries (e.g. Pajunen, 2008), effects on MNEs location choice between countries (e.g. Grosse & Trevino, 2005), and the effects more generally on IB  (e.g. Jackson & Deeg, 2008).

It can be stated that the approaches to study institutions have mostly focused on understanding the influences various contexts exert on MNEs, and how they could strategically respond to these challenges or even take advantage of them. The criticism of the institutional approaches within IB studies has been on the thin view of institutions as merely a variable of contextual differences (Aguilera & Grøgaard, 2019; Jackson & Deeg, 2008, 2019; Kostova et al., 2008).

Within organisation studies, the focus of research has moved from understanding organisational development to understanding the micro foundations of institutions spurring new conceptualisations and methodological approaches (e.g. Furnari, 2019; Gray et al., 2015; Powell & Colyvas, 2008; Tracey, 2016). The criticism for institutional approaches in organization studies relates to the concept becoming too general and ambiguous in its multiple definitions (e.g. Alvesson et al., 2019; Reed & Burrell, 2018; Willmott, 2014), to overly actor-centric approaches, and to the inability to take into consideration the wider societal context (Lounsbury & Wang, 2020). Thus, there have been recent calls for approaches focusing on more industry-

and macro-level explanations of institutional change (Lounsbury & Wang, 2020; Meyer & Vaara, 2020).

IB studies have long called for more contextual studies. As an example, Jackson and Deeg in their recent 2019 article repeated their call for a 'thicker' view on institutions in IB presented in their seminal paper published in the Journal of International Business Studies (JIBS) in 2008. Using a thick description enables researchers to extract more depth and detail from their data, exploring various underlying assumptions and contextual nuances in a comprehensive way beyond just a straightforward statement (Cornelissen, 2017; Welch et al., 2011). To answer this call, this study applies the institutional logics perspective.

The institutional logics perspective (Friedland & Alford, 1991; Thornton et al., 2012; Thornton & Ocasio, 2008) builds a meta-theoretical framework to study institutional change. This approach categorises institutions differently into ideal type societal level logics that represent the prevailing organising of different sectors of society rather than dividing them into more formal and informal/ regulative, normative and cultural/cognitive elements of institutions (Thornton et al., 2012). Thus, the focus of understanding either the structure or the agency changes to understanding both as interconnected faces of a system. Figure 1 illustrates the theoretical positioning of the thesis and the role of the articles and the synthesis part in building the theoretical model.
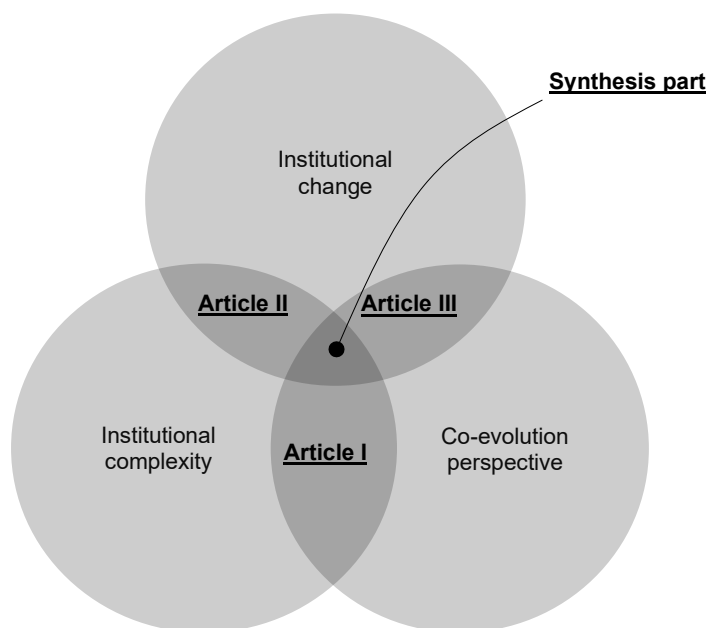


**Figure 1.** Theoretical Positioning of the Study

This study will apply three particular aspects of institutional logic: institutional change, institutional complexity, and co-evolution. The institutional logics perspective conceptualises institutional change as a much more multifaceted phenomenon, and not only as a change from one institutional structure to another (Raynard, 2016). The second aspect, institutional complexity, stems from the view that society is considered to comprise of multiple institutional logics that may cause contradicting pressure for companies (Greenwood et al., 2011). To further explore the dynamics of change, this study applies a co-evolutionary approach. This approach considers how individuals, firms, and their environments evolve together by mutually influencing each other, and this gradual process leads to incremental developments that induce change.(Cantwell et al., 2010; Volberda & Lewin, 2003; Wilson & Hynes, 2009). The focus and research approaches of the three articles are presented in the next chapter.

## 1.4    Purpose and Structure of the Thesis

This study contributes to our understanding of the dynamics of co-evolution of industry-level institutional change, and focuses on the dynamics of environmental selection in co-evolutionary institutional change. The study highlights the non-linearity of change, and the necessity to understand further the taken-for-granted assumption we hold and their role in our view of futures development trajectories. It shows that multimethod studies provide great opportunities to build further our understanding of interconnected multi-level phenomena.

The purpose of this study is to understand institutional change of the pharmaceutical industry as a co-evolutionary interplay between institutional complexity and MNE. This aim is divided into three sub questions: (1) How do firm strategy development and industry level institutional complexity evolve together over time? (2) How dies the variety of institutional complexity of the industry at the national level influence foreign direct investment attractiveness? and (3) How institutional change at the industry level develop at the intersection of different institutional fields?

When studying complex multi-level phenomena, it is important to define clearly three key issues: what is changing, in relation to what it is changing, and how it is changing. Therefore, the first key issue is to consider the unit of change, which can occur at multiple levels simultaneously within a firm and in its external environment (Wilson & Hynes, 2009). In this study, the focus is the change in the pharmaceutical industry. Thus, taking a wider perspective on change than that of an individual company or organisation. The second key issue is the unit of selection meaning in relation to what the change takes place (Wilson & Hynes, 2009). This study views selection as a dynamic process through institutional logics change. In regard to the

third important issue to consider, mechanisms of change (Wilson & Hynes, 2009), this study turns to the co-evolutionary literature and mechanisms of adaptation and selection (Volberda & Lewin, 2003).

This study adopts a qualitatively driven research approach applying multimethod design, providing an opportunity to question generally held assumptions, particularly by identifying empirical variances and complexities that single propositions may struggle to explain (Cornelissen, 2017). The dynamics of the multiple methods have the potential to identify more processual or dialectical kinds of elements of the changing institutional complexity, when compared to the more traditional research approaches in IB based on variance, or 'net-effects' type of causal relationships (Cornelissen, 2017). This study focuses on understanding how the opportunities and challenges faced by pharmaceutical companies are being constituted in its industry environment and approaches these processes as heterogeneous and often competing configurations of beliefs and practices that construct the industry and its dynamics (Lounsbury & Wang, 2020; Meyer & Vaara, 2020). This research approach enables a critically reflexive understanding of the change focusing on how the challenges faced by MNEs are constituted rather than focusing on the overly actor-centric analysis (Meyer & Vaara, 2020).

Article I is focused on the first sub-question and explores the past development of the pharmaceutical industry through historical research methodology. Article II studies sub-question two through a configurational research approach focusing on prevailing institutional logics. Article III on the other hand focuses on sub-question three and applies futures studies research methods. Figure 2 summarizes the outline of the study.

This thesis is comprised of two parts. The first part is the synthesis part of the thesis, which aims to build further the co-evolutionary perspective on institutional change in IB settings. Chapter 1 presents the phenomenon under study in this thesis, reviews the earlier perspectives on MNE embeddedness in IB studies as well as presents the perspective this study takes to further explore this more holistic take on contextuality for international business studies, and defines the aim of the study. Chapter 2 reviews the three selected theoretical perspectives in more detail and aims to highlight their independent contribution to IB studies. Chapter 3 discusses the research approach of the thesis, the methodological choices of the independent articles, and the quality of the study. Chapter 4 highlights the results of the three articles and builds, based on the articles, an integrating framework for understanding contextuality through these results and the selected theoretical perspectives. Chapter 5 concludes the study by highlighting the theoretical, methodological, managerial, and policy contributions of the research.
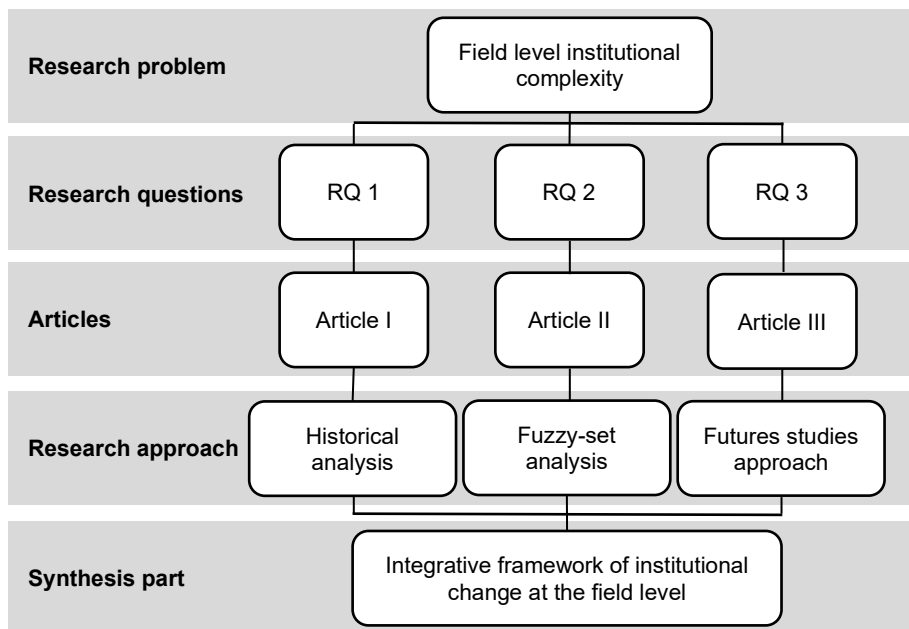
**Figure 2.** Outline of the Study.

The second part of the thesis is comprised of three independent articles based on different methodological approaches and focused on different theoretical aspects of field level institutional complexity but on the same empirical context: the pharmaceutical industry.

# 2 Institutional Complexity and Multinational Enterprise

## 2.1 Institutional Logics Perspective

The institutional logics perspective has been increasingly utilised in the organisational literature (Lounsbury et al., 2021). However, in IB studies it has been less prevalent. While some studies have applied this perspective to analyse the responses of MNEs to institutional complexity (Newenham-Kahindi & Stevens, 2018; Saka-Helmhout et al., 2016), only a few have examined the role of MNEs in changing institutional logics at the field level (Newenham-Kahindi & Stevens, 2018; Regnér & Edman, 2013).

The institutional logics perspective is based on the neo-institutional theory and offers a way to analyse the relationships between institutions, individuals, and organisations in social systems (Friedland & Alford, 1991). It provides a meta-theoretical framework for this analysis. (Friedland & Alford, 1991; Thornton et al., 2005, 2012). Institutional logic refers to the patterns of material practices, values, and beliefs that are socially constructed and have a historical context (Thornton & Ocasio, 2008). Individuals use these patterns to organise their time and space and make sense of their social realities (Friedland & Alford, 1991; Thornton & Ocasio, 1999). Society is viewed as an interinstitutional system, which implies that the institutional environment is comprised of several interrelated institutional logics (Thornton et al., 2012). Table 2 presents the institutional orders identified by earlier research (Friedland & Alford, 1991; Thornton, 2004; Thornton et al., 2012).

**Table 2.** Ideal Type of Institutional Orders of the Interinstitutional System (modified from Thornton et al., 2012, p. 56).

| Feature | Symbolic analogy | Sources of legitimacy | Sources of authority |
|---------|------------------|-----------------------|----------------------|
| Market | Market as transaction | Share price | Shareholder activism |
| Corporation | Hierarchy as a corporation | Market position of the firm | Board of directors/ management |
| Profession | Professions as a relational network | Specialisation staff | Professional associations |
| State | State as a redistribution mechanism | Democratic participation | Bureaucratic domination / political parties |
| Family | Family as a firm | Unconditional loyalty | Patriarchal domination |
| Religion | Temple as a bank | Summoning supernatural | Personal charisma of the priest |

The presented ideal types of institutional orders influence all levels of the interinstitutional system. Institutional logics at a societal- level refers to the different types of relationships and interactions between actors within a society (Friedland & Alford, 1991; Greenwood et al., 2014). For example, economic models such as capitalism and communism serve as societal-level ideal types for organising economic activities. Different nations and industries manifest these ideal types uniquely, resulting in varying organisational structures, authority systems, and decision-making processes. For example, capitalism in the United States looks different from that in Nordic countries, and the same is true for industries such as healthcare or construction (cf. Greenwood et al., 2014). An organisational field refers to a community of actors held together by shared values and beliefs; therefore, a field can be defined by describing the institutional logics guiding actors' behaviours (Reay & Hinings, 2009; Scott, 2001). The institutional logics at the field- level impact the strategic decisions made by organisations, including their size, geographic reach, product and service offerings, and approach to governance (Greenwood et al., 2014). Field level is critical in institutional analysis although it has not received much scholarly attention (Glynn & D'Aunno, 2023). The field level in this study is associated with industry. Industry provides a valuable level of analysis for studying institutional logics because producers within the same industry share common identities and values that shape how they operate and make decisions in their respective markets (Thornton & Ocasio, 1999).

### 2.1.1 Interinstitutional System

According to the institutional logics perspective, society is viewed as an interinstitutional system of multiple institutional logics interacting with each other (Friedland & Alford, 1991; Thornton, 2002). This suggests that society is made up

of various institutional orders, each with its own distinct relationships and exchanges between societal actors and its own institutional infrastructures for organisations (Thornton et al., 2012; Thornton & Ocasio, 2008). These institutional orders include market, family, corporation, religion, professions, and state, and each has its own specific logic that provides criteria for acceptable behaviour (Friedland & Alford, 1991; Thornton, 2004; Thornton et al., 2012). Therefore, legitimacy and power are gained through different mechanisms and interactions within each institutional logic (Greenwood et al., 2014). These institutional orders are not reflected as such at multiple levels of the system but are instead transposed through the embedded levels of analysis (Thornton et al., 2012).

This interinstitutional system has four core meta-theoretical principles that underlie the changes and functioning of the system: 1) historical contingency, 2) the partial autonomy of social structure and action, 3) the understanding of how institutions operate at multiple levels of analysis, and 4) the integration of the symbolic and material aspects of institutions (Thornton et al., 2012, pp. 50, 103).

The principle of historical contingency implies that institutional logics change over time. The importance of the influence of a particular institutional logic is not given in their age of origin, and their influence varies over time and space (Thornton & Ocasio, 2008, p. 108). Therefore, the manifestation of logics in organisational form, the space it provides for agency, and its material and symbolic aspects are specific to a given time and space (Skelcher & Smith, 2015). For example, the role of religion logics in the medieval period in Europe was very different from what it is today (Thornton et al., 2012, p. 12). The assumption of the historical contingency of institutional logics is necessary to be able to build a theoretical framework for the interplay of stability and change in the interinstitutional system.

The partial autonomy of social structure and action enables the dynamics between structure and agency (Martin et al., 2017; Thornton et al., 2012). This means that the contradictions between institutional logics and the different levels generate space for an actor to deviate from the prevailing logics creating agency (Greenman, 2013). For example, in the healthcare sector, the logics of markets and caretaking can cause contradicting pressures and require agency from the actor to respond to these pressures.

Institutions operate on different levels of analysis that are nested within each other. Friedland and Alford (1991) identified three levels: individuals, organisations, and society. Here, higher-level institutions specify the opportunities and constraints for the lower-levels. Societal-level institutional logics influence the organisational fields differently (Greenwood et al., 2011, 2014). This means that as societal-level logics are articulated differently within the various organisational fields, organisational arrangements, decision-making structures, and authority systems differ (Greenwood et al., 2014). Thus, these organisational field-level logics impact

strategic decisions such as the size, scope, products/services, and governance approach, and give greater specificity in the material and symbolic manifestations of prevailing institutional logics (Greenwood et al., 2014). In addition to the three levels (individuals, organisations and society), studies have also examined the role of the meso level (Greenman, 2013; Thornton & Ocasio, 1999). Thornton and Ocasio (1999) suggested that industry is a relevant boundary for identifying institutional logics. At the industry level, common identities and valuation orders structure the decision-making and practices of actors (Thornton & Ocasio, 1999).

The integration of the symbolic and material aspects of institutions brings forward the ability to theorise institutional heterogeneity and change. Both the material and symbolic aspects provide the formal and informal rules for action, interaction, and interpretation, guiding the appropriate ways of doing, goals to achieve, and ways to operate (Thornton & Ocasio, 1999). Therefore, each societal-level institutional logics has both material and symbolic elements. Here, the material elements refer to structures and practices, and the symbolic elements refer to ideation and meaning. The symbolic elements are embodied in the material elements, and the material elements express and affect the meaning and ideation of symbols. Symbolic aspects become institutionalised through practices as they achieve collective meaning (Thornton et al., 2012, 11). This means that the seemingly identical institutional practices and structures may be infused with different actors and therefore have different meanings and institutional effects. In addition, symbolic and material elements are not stable but change over time. (Thornton et al., 2012, pp. 10–11). However, although the symbolic and material elements are intertwined, they can be analytically separated (Delbridge & Edwards, 2013; Thornton et al., 2012, p. 11).

The interinstitutional system perspective provides an alternative approach to examine institutional changes in relation to the neo-institutional and institutional economics approaches. The institutional logics perspective sheds light on the connections between society, industries, and actors. However, research has been insufficient on the relationship between the interinstitutional system at society and industry level (Nicolini et al., 2016). Institutional logics and their changes have mainly been conceptualised between the organisation and industry levels. Studies have typically only briefly referenced national politics as a way to provide context. Thus, the current empirical research on how conflicting directives from various societal structures contribute to the development of institutional complexity within industries is limited (Besharov & Smith, 2014; Nicolini et al., 2016; Raynard, 2016).

## 2.1.2    Institutional Complexity

The institutional logics perspective views actors as able to both reproduce existing institutional logic and innovate and thus transform the prevailing institutional order (Thornton et al., 2012, p. 6; Thornton & Ocasio, 2008, p. 104). The ability to change the prevailing institutional logics stems from the assumption of partial autonomy of actors from the social structure (Friedland & Alford, 1991; Thornton & Ocasio, 2008, p. 104). The interinstitutional system view assumes that there are always conflicting pressures on actors' cognitive and behavioural capacities, which requires the development of multiple roles and identities (Thornton et al., 2012, p. 57). Actors may well be influential elements of institutional agency, but these actors and their actor-hood are socially constructed and thus affected by institutional pressures (Delbridge & Edwards, 2013). Organisations' attributes (position within a field, structure, ownership and governance, and identity) provide constraints and opportunities for generating change in institutional logics (Greenwood et al., 2011; Thornton et al., 2012).

Institutional complexity refers to the multiple and often conflicting institutional logics at play, simultaneously employing multiple pressures for firms (Faulconbridge & Muzio, 2016; Greenwood et al., 2011; Hacker & Binz, 2021). Institutional complexity continuously changes as new firms enter the field and current firms compete, changing their positions within the field, and influencing institutional complexity and how it is experienced (Greenwood et al., 2011). Therefore, changes in organisational responses are important, as they have implications for social legitimacy and, through this, for a firm's access to critical resources (Faulconbridge & Muzio, 2016; Greenwood et al., 2011).

Organisations' responses to institutional complexity have been the focus of interest in institutional complexity literature (Battilana & Dorado, 2010; Faulconbridge & Muzio, 2016; Greenwood et al., 2011; Smets et al., 2012). These studies have identified multiple strategic and structural responses and enriched Oliver (1991) seminal work on strategic responses to institutions. For example, compartmentalisation has been identified as a structural means to avoid complexity by partitioning and containing different logics within distinct and separate organisational structures (Greenwood et al., 2011). In addition, in their study on Bolivian micro-finance providers, Battilana & Dorado (2017) showed how a firm succeeded in blending commercial and community logics by purposefully recruiting people with no previous exposure and therefore attachment to either logic. In another study that investigated English law firms in Italy, the authors identified field relocation (reconfiguring to target new and more favourable field locations) as a means to respond to complexity at the field level (Faulconbridge & Muzio, 2016). In addition to the incompatibility (competition) between different institutional logics as source of institutional complexity, logics can also cause complexity by unsettled

prioritisation in the field or have jurisdictional overlaps (Raynard, 2016). Thus, change at the field level is a complex process to which the multiple embeddedness and networked nature of MNEs provide additional challenges and opportunities to cope with these different types of institutional complexities (Kostova & Zaheer, 1999; Raynard, 2016).

As a meta-theory, institutional logics assumes that institutions develop at variety of different levels from organisations and inter-organisational networks to industries, geographical communities, and organisational fields (Thornton & Ocasio, 2008, p. 106). At the organisational field level complexity can be characterized by three dimensions: fragmentation, formal structuring/rationalisation, and centralization/ unification (Greenwood et al., 2011). These dimensions influence the number and type of institutional demands placed on organisations, which in turn influence the level of institutional complexity. Fragmentation refers to an organisation's dependence on multiple uncoordinated constituents for legitimacy or resources, which increases institutional complexity. Formal structuring/rationalisation refers to how competing demands are organised, either formally or informally, and its influence on institutional complexity is unpredictable. Centralisation/unification measures the hierarchical power structure of institutional constituents, with higher centralization resulting in lower institutional complexity as competing demands are resolved at a higher level (Greenwood et al., 2011, p. 337).

### 2.1.3    Institutional Change

Institutional change can be viewed as a result of purposeful planning and centralised implementation by individuals or groups of individuals through, for example, collective choice or lobbying (Kingston & Caballero, 2009). Thus, change is considered a result of planned behaviour. Another perspective of institutional change is more evolutionary. This perspective views that new institutional forms periodically emerge through random or more purposeful processes and undergo some type of decentralised selection process as they compete against alternative institutions (Gümüsay et al., 2020; Kingston & Caballero, 2009). This study takes the perspective of a later approach.

An interinstitutional system can be analysed at multiple levels, and the archetypal institutional orders do not directly influx throughout these different levels (Thornton et al., 2012). Higher-level institutional logics offer readily available and easily accessible categories and schemas that aid individuals in sensemaking and taking action. These categories and schemas are transformed and integrated into theories, frameworks, and narratives that have the ability to uphold or alter existing institutional logics (Thornton et al., 2012). Here, theory refers to the most abstract and systematic forms of symbolic representation, providing general guiding

principles and explanations for why and how institutional structures and practices should operate (Thornton et al., 2012). As such, theories are not institutions, as they do not necessarily generate action or practices. However, when they do, the influences are generally widely diffused and may become self-fulfilling (Hacker & Binz, 2021; Thornton et al., 2012). Frames refer to more concrete and less systematic symbolic constructions that allow individuals to connect events within their context (Furnari, 2019; Glaser et al., 2016; Thornton et al., 2012). Frames can be transferred or imported from one institutional logic to another without adopting all the components of institutional logics (Furnari, 2019; Thornton et al., 2012). Narratives refer to a story that organises events and actions into a whole giving meaning to specific actors, events, and practices (Song, 2022; Thornton et al., 2012). Narratives are shaped by theories and frames but are more concrete and reflect particular organising practices; thus, narratives translate individual-level sensemaking to group and collective levels, and emerge through social interaction (Thornton et al., 2012). Therefore, narratives are shaped by both theories and frames and by both practices and actions. These multi-level dynamics create the institutional change mechanism that can emerge in various forms, linking societal-level institutional changes to the individual-level practices and actions.

Interinstitutional system changes can arise from various sources, including alterations in societal institutional logics at higher levels, external logics from another field, or shifts in resource endowments and internal contradictions within the field (Micelotta et al., 2017).

Earlier literature has provided different typifications of institutional changes. Thornton et al. (2012, p. 164) provided a typology of institutional changes on the field level based on the forms of change divided into: transformational and developmental changes. Here, the change in institutional logics is categorised according to its direction and extent. The transformational change replaces logic with another or combines the dimensions of different logics or separates them from common origin. The developmental change incorporates external dimensions, endogenously reinforces logics, shifts from one field to another, or decreases the scope of logics (Micelotta et al., 2017).

Changes can unfold at varying paces. Revolutionary change occurs rapidly when external factors disrupt existing institutional norms. This type of change is driven by external shocks or intentional actions taken by change agents. On the other hand, evolutionary change is slower and brought about by gradual societal shifts, incremental innovations introduced by change agents, or accumulated changes in practices at the field level (Micelotta et al., 2017). On the basis of their scopes and paces, institutional logics changes can follow four pathways: institutional displacement, institutional accommodation, institutional alignment, and institutional accretion (Micelotta et al., 2017).

Regnér and Edman (2013) identified three MNE-specific attributes that differentiate them from local companies and make them more likely to challenge local norms and behaviours: "(1) the MNE's boundary-spanning position as a multinational (multinationality); (2) the MNE subunit's weakly embedded foreignness position in the host country (foreignness); and (3) the MNE's exposure to ambiguity in the host country institutional environment (institutional ambiguity)" (p. 294). These MNE-specific enablers give institutional advantages to MNEs in shaping prevailing institutions.

The institutional logics literature has strongly focused on organisational responses to institutions, which cumulate at a higher level and generate macro-level changes and trends, which then trigger new responses. Thus, by focusing only on understanding the responses of an organisation in complex institutional settings, it is necessary to understand the dynamics and interconnectedness at a higher level. To broaden the scope of actions of a single organization, this study turns to co-evolutionary literature.

## 2.2      Co-evolution of MNE and Institutions

### 2.2.1      Co-evolutionary Approach

Co-evolutionary approaches have been widely applied not only in natural sciences but also in multiple social science fields, including management studies, organisational research and IB studies (e.g. Breslin, 2016; Cantwell et al., 2010b; Child et al., 2012; Fatas-Villafranca et al., 2008; García-Cabrera & Durán-Herrera, 2016; Nayak & Maclean, 2013; Volberda & Lewin, 2003). In natural sciences, co-evolution is based on the idea that natural selection takes place but that the simultaneous change in two organisms can result in favourable inherited traits, which gives an advantage to both organisms simultaneously at the individual and dyadic levels (Wilson & Hynes, 2009). Therefore, co-evolution is based on two general mechanisms of adaptation and selection (Volberda & Lewin, 2003).

In the context of social sciences, co-evolution has been defined as the "simultaneous development of organizations, alliances and the environment independently and interactively" (Das & Teng, 2002, p. 726). Co-evolution is characterised by multi-levelness/embeddedness, multi-directional causalities between macro- and micro-evolution, nonlinearity, positive feedback, and path and history dependence (Lewin et al., 1999; Lewin & Volberda, 1999). For co-evolution to take place, the interacting entities must be heterogeneous, must have adaptive/learning capabilities, and must interact and mutually influence each other (Volberda & Lewin, 2003; Wilson & Hynes, 2009). Therefore, although co-

evolution is, to some extent, path-dependent, it also has partial autonomy that enables agency (Flier et al., 2003).

Interactions in a co-evolutionary system stem from feedback between the whole and the parts. In this interrelated process of adaptation and selection, change is possible in all interacting populations of organisations and driven by both direct interactions and feedback from the rest of the system (Volberda & Lewin, 2003). Positive feedback drives change, and negative feedback maintains stability (Mitleton-Kelly, 2003, p. 37). Thus, co-evolutionary approaches address the interrelationships between firm-level adaptation processes and population-level selection pressures. This means that the configuration of any industry and the structures of the firms in that industry are the result of the constant interaction between the firm and the environment (Verdu et al., 2012).

Institutional approaches and the co-evolution perspective have been integrated already in earlier studies (e.g. Cantwell et al., 2010; Carney & Gedajlovic, 2002; Child et al., 2012; García-Cabrera & Durán-Herrera, 2016; McGaughey et al., 2016; Nayak & Maclean, 2013). Earlier research has strongly emphasised understanding co-evolution at the organisational level, focusing on internal events and activities (Breslin, 2016) or on understanding co-evolution in a dyadic manner between two elements such as corporate culture and the business environment (Cordes et al., 2010), and organisational 'power' and the business environment (Aluko & Knight, 2017). By contrast, this study views co-evolution in a broader sense as a joint evolution of multiple entities (Haveman & Rao, 1997; Murmann et al., 2001) and aims to further extend the understanding of co-evolution on the systemic level. Few studies have specifically examined the role of MNEs as actors in institutional co-evolution (e.g. Cantwell et al., 2010; Dunning & Lundan, 2008; García-Cabrera & Durán-Herrera, 2016; Pajunen & Maunula, 2008). One central theme of co-evolutionary studies in the social sciences has been to understand the interactions of technology, institutions, and industry structure (Funk, 2009). Thus, the focus has been on the interaction between different change processes (García-Cabrera & Durán-Herrera, 2016; Pajunen & Maunula, 2008).

García-Cabrera and Durán-Herrera (2016) developed an extensive co-evolutionary process model for the interaction of MNEs and institutions. The model integrates MNE-related institutional capabilities with field-level factors that enable MNEs to influence institutions. Pajunen and Maunula (2008) also proposed the co-evolution approach and MNEs in their study focused on internationalisation as a co-evolutionary process reflecting MNE's internationalisation steps with resource and industry evolutions. Their study brought forward the idea of internationalisation as a complex process interrelated with multiple external and internal factors (Pajunen & Maunula, 2008). However, both studies focused on understanding change as a particular event rather than as a part of the continuous development of a system. In

line with the broader literature on co-evolution, they focused on understanding the adaptation of organisations.

Cantwell et al. (2010) identified three forms of engagement of MNEs and institutions from earlier research: (1) institutional avoidance, (2) institutional adaptation, and (3) institutional co-evolution. The first form, institutional avoidance refers to engagement where MNEs take the external institutional environment as a given but can make choices between different institutional environments. The second form, institutional adaptation, similarly to the previous form, refers to engagements where the MNE treats the institutional environment as essentially exogenous but does not just select between different environments: it also seeks to adjust its own structure and policies to better fit the environment. In the third, institutional co-evolution, the institutional environment is assumed to be partly endogenous, and the MNE is engaged in a process of co-evolution. Although firms may employ some of the same tactics they used under the previous scenario, the MNE's objective is no longer simply to adjust but to affect change in the local institutions, whether formal or informal.

MNE's engage with host markets at different levels of commitment. Foreign direct investments (FDIs) are considered to require a long-term commitment to the host country and have been linked to global economic growth, innovation diffusion, and free trade advancements. FDI builds on transferring assets such as capital, technology, management and organisational skills, and employees across national borders (Alon et al., 2022; Bailey, 2018; Dunning & Lundan, 2008). Particularly FDI attractiveness literature has focused on understanding and identifying the characteristics of the host country that attract MNEs to commit and invest (Alon et al., 2022). These studies have focused on the business environment on a national level and on economic factors such as market size, the proximity of the market, exchange rates, and labour costs (Bailey, 2018; Pajunen, 2008; Erdal & Tatoglu, 2002). However, more recent studies have explored institutional and cultural factors and distance; such as the rule of law, corruption, political stability, and Hofstede's cultural dimensions (e.g. Ketteni & Kottaridi, 2019; Lu et al., 2014; Hutzschenreuter et al., 2011; Pajunen, 2008). The differences between national institutional environments and FDI attractiveness provide an opportunity to explore the variety of institutional contexts at the industry level (Bailey, 2018). The high commitment related to FDI and the assumption that nations intentionally aim to develop FDI-attractive markets provides a theoretical basis to study institutional co-evolution.

To summarise from earlier research on the co-evolution of institutions and MNEs, it is evident that this co-evolution takes place on multiple levels. Change in the prevailing institutional system requires changes on the regulative, normative, and cultural-cognitive levels (García-Cabrera & Durán-Herrera, 2016). This means that regulative changes on their own are rarely enough and thus require evolvement and

changes in the institutional elements on related normative and cultural-cognitive levels (García-Cabrera & Durán-Herrera, 2016). Institutional co-evolution can be observed in multiple forms involving a different balance between adaptation and selection, and at different levels. For example, co-evolution may involve activities in which the MNE engages to affect institutional change at the supranational level (Cantwell et al., 2010a; Geels, 2014; Malerba et al., 2008). In the co-evolutionary approach, change is generally considered to stem from interruptions and strong interventions by actors (Child et al., 2012; García-Cabrera & Durán-Herrera, 2016). The path-dependent nature of co-evolutionary institutional change relates to organisations' ability, on the one hand, to reflect the institutional conditions in which they emerge and, on the other hand, to shape the institutions directly through strategies and resource allocations, and indirectly through the development of infrastructures and other structures that support the organisation's needs (Carney & Gedajlovic, 2002). These interactions take place through the mechanisms of adaptation and selection.

## 2.2.2    Dynamics of Selection and Adaptation

The basic assumption in the co-evolution theory is that managerial adaptation and environmental selection are not opposed but are interrelated processes. In other words, change is an outcome of both adaptation (intentionality) and selection (environmental effects) (Lewin & Volberda, 1999). The co-evolutionary approach differs from the more traditional management thinking of 'the survival of the fittest', in which the unit of change or evolution is firm. Thus, the firm is the unit that sets the strategy and the best firm succeeds (Wilson & Hynes, 2009). In the co-evolutionary approach, a firm, dyad, or group of firms change simultaneously with the environment (Volberda & Lewin, 2003). Thus, the explanatory factor stems from the simultaneous change between the macro-, micro-, and meso-level environments around the organisation (Rodrigues & Child, 2003).

Selection forces stem from the constraining role played by the environment, including cultural elements and symbols, cognitive systems, and norms and rules (Aldrich, 1999; Flier et al., 2003). Selection refers to the mechanism of the environment selecting out the actors that will survive. When studying co-evolution at the organisational level, Volberda and Lewin (2003) identified four generative mechanisms that drive specific co-evolutionary patterns of multi-unit firms: naive selection, managed selection, hierarchical selection, and holistic selection. Naive selection is based on blind variation, competitive selection, and retention. This process is more passive in the sense that top management does not actively seek to adjust the firm to its environment: rather, the environment chooses which units survive. Managed selection refers to a more deliberate variation based on past

experiences and top management control systems. Thus, rather than a blind and random variation, adaptation takes place, increasing the influence of top management. However, managerial intentionality is still considered limited. In hierarchical selection, the role of top management is highlighted and adaptation is viewed as a result of top-down processes. Holistic selection is strongly related to collective cognition, where collective sense-making is the engine of co-evolution. Thus, the interdependence of adaptation and selection is not a straightforward but is a strongly context- and time-sensitive process, taking place at multiple levels. The main aim of earlier studies has been to better understand the agency of organisations rather than to understand the interactions of different change processes more holistically (Breslin, 2016).

In these types of complex multi-level interconnections, anticipating the outcomes of a change is difficult, as change in one part, even a minor one, might cause major changes somewhere else in the system. Thus, the system is self-adaptive; that is, it can adapt and evolve, which makes the emergence of new order and logics possible (Mitleton-Kelly, 2003, p. 31). This property of emergence is reliant on historical dimensions, which means that the history of the system limits the plausible options to some extent. Thus, in a society, not ruled by natural laws but is based on human interactions, although in principle almost anything could be changed to anything (as no natural laws would prevent that), the historical legacy of the system limits the options of the new order and logics (Mitleton-Kelly, 2003, p. 35). Thus, co-evolution triggers emerging new orders and logics by the different complex evolving systems that activate change in each other by simply adapting and evolving themselves. Consequently, co-evolution in complex systems occurs not only between two parts but between the part and the whole (Knyazeva & Kurdyumov, 2001).

## 2.3 Synthesis of Co-evolution of MNE and Institutional Environment

The literature presented in the previous two subchapters is integrated into a framework of co-evolution of MNE and institutional environment (Figure 3). The framework focuses on the change in institutional complexity that is central to the co-evolution of MNE and institutional environment.

The institutional environment is constantly evolving. It consists of multiple institutional logics, creating a dynamic multi-level system that includes both formal and informal institutional elements. These formal and informal elements can be observed at multiple levels, from regional, national, and industrial levels to the organizational level. For example, formal institutions such as laws and rules, and informal institutions, such as beliefs and values, can be observed at the regional,

national, or organisation level. The institutional environment both constrains actors' behaviours and defines the acceptable ways of acting and goals to achieve.
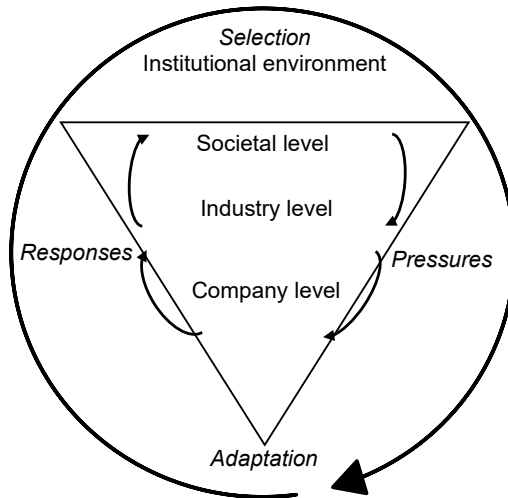
**Figure 3.** Co-evolutionary Institutional Change.

Institutional complexity refers to the overlap and contradictions of multiple institutional logics. It causes uncertainty and ambiguity in managerial and policy decision-making, as it requires choices of 'rules' to follow. Institutional complexity can stem from changes in firm strategies, industry norms, national or regional regulations, or technological or environmental developments.

This institutional complexity from multiple institutional logics allows the agency of individuals and organisations. When facing contradicting pressures, actors are required to respond. Their responses vary, as the institutional complexity is experienced differently by actors. The different responses create the necessary variance for change to emerge. Thus, through this agency, organisations can change the institutional environment in which they are embedded. MNEs are specific types of organisations that are networked on their structure and embedded in multiple contexts. Therefore, they are in apposition to shaping prevailing institutions.

The institutional environment aims at bringing stability and predictability to actors' behaviours; in other words, it provides the rules of the game. Institutional complexity stems from the ongoing multiple games and their interactions. This enables actors to alter the rules. As the rules change, the experienced institutional complexity also changes, and demands new responses from the actors. This creates a co-evolutionary cycle of change. In this cycle, the actors' adaptations and retentions cause changes in the selection criterion of the institutional environment. Therefore,

the changed institutional environment demands a constant development of actor's responses.

Owing to the interconnectedness of multiple levels and multiple institutional logics, the magnitude and directions of change are limited and difficult to anticipate. The variety of possibilities and/or constraints depends on the homogeneity/ heterogeneity of the actors and on the prevailing structures of the institutional environment. Thus, in addition to the historical contingency from the structure, the homogeneity of actors creates stability (maintenance of prevailing institutional logics).

# 3 Research Methodology

## 3.1 Research Approach

This study aimed at understanding institutional change of the pharmaceutical industry as a co-evolutionary interplay between institutional complexity and MNE. Therefore, the general aim of this research was not to find unvarying causal links or truths but rather to thoroughly investigate this phenomenon with the most appropriate research method or mixture of methods (Feilzer, 2010). Hence, this study was guided by a pragmatist research philosophy (Dewey, 1916; Peirce, 1878, 1905). Pragmatism accepts that multiple realities can be empirically studied and oriented towards solving practical problems in the real world (Dewey, 1916; Feilzer, 2010). The measurable world is viewed as an experiential world comprising different elements and layers that can be objective, subjective, or a mixture of these (Feilzer, 2010). Therefore, rather than considering truth to be an agreement with reality, it is considered an agreement among ourselves (Lynch, 2001). However, this agreement can only be achieved through scientific methods (Lynch, 2001; Peirce, 1878).

This study followed a qualitatively driven research approach (Jakobsen & Worm, 2020; Marschan-Piekkari & Welch, 2004; Welch et al., 2011). The qualitatively driven approach in this study refers to an idea of qualitative research more broadly than purely the use of qualitative data (Hesse-Biber et al., 2015). Thus, the study adopted Van Maanen's (1979, p. 520) definition of qualitative research as 'an umbrella term' to cover an "array of interpretive techniques that can describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world". Qualitative research methods have strengths in exploring root causes, complexity and sequential patterns (Cornelissen, 2017; Delbridge & Fiss, 2013; Harley, 2015). In this study, the selected research approach allowed the use of a thick contextual approach to study the pharmaceutical industry transformation and application of broad types of data and analytical methods.

This study focused on the interconnections between multiple levels and viewed change as an outcome of the actions of multiple simultaneously developing entities. Therefore, under this qualitatively driven approach, this study applied a multimethod research design (George et al., 2004). A multimethod research design refers to the

application of two or more different methods or styles of research within the same study or research programme rather than confining the research to the use of a single method (Hunter & Brewer, 2015). This research design is different from mixed-method research as it is not restricted to combining qualitative and quantitative methods but is open to a wider variety of possible methodological combinations (Hunter & Brewer, 2015). Multimethod studies offer the possibility to answer complex social research questions and explore these questions by combining data at different levels (Anguera et al., 2018).

In this study, the multi-faceted, contextually situated interactions present in the change dynamics of industry-wide institutional complexity development were studied using three research methods: (1) historical approach, (2) configurational approach, and (3) futures focused research approach. These approaches provided the possibility to explore institutional complexity from different perspectives related to time. The multimethod approach allows a researcher to investigate the different research questions within one study through different methodologies (Anguera et al., 2018; Hunter & Brewer, 2015). However, each method should logically follow the four main steps of scientific enquiry: identification of the research question, collection of data, analysis of data, and interpretation of results (Anguera et al., 2018). Thus, the multimethod approach closely relates to the concept of methodological triangulation (Denzin, 2010, 2012). Through these qualities, the multimethodological approach provided analytical tools to deepen the understanding of institutional change at the industry level as these changes span over long time periods as well as are interconnected by their nature.

A multimethod research approach enables a constructive interplay between paradigms and the application of multiple research methods, allowing for building mid-range theories (Birkinshaw et al., 2011). Mid-range theories focus on more separate social phenomena rather than on explaining the dynamics across all societies (Birkinshaw et al., 2011). This provided the potential to develop a dynamic model for understanding the pharmaceutical industry transformation as a co-evolutionary development of institutional complexity and MNEs.

## 3.2    Research Process

The research process in this study followed the idea of the hermeneutic circle (De Geer et al., 2004), which captures the process of creating understanding. The hermeneutic circle describes the creation of understanding as a circle between the whole (theoretical) and a particular (empirical) (Grondin, 2017). In Figure 4 the research process of creating further understanding of the phenomenon under study is illustrated as a cyclical process between the theoretical and empirical dimensions. This study began with the phenomenon identified within the pharmaceutical

industry: the complexity of change. The three articles were built on each other by exploring different face sets of this complexity. The research process thus goes back and forth with the empirical setting of the pharmaceutical industry and the theoretical literature on institutional complexity, institutional change, and co-evolution.

The process started by gaining a pre-understanding of the pharmaceutical industry changes through industry analysis and background interviews. From this pre-understanding emerged the challenge of the complexity of change. Next, relevant literature was identified, and a preliminary theoretical framework was developed and further integrated into the pharmaceutical industry through earlier research in this particular context.
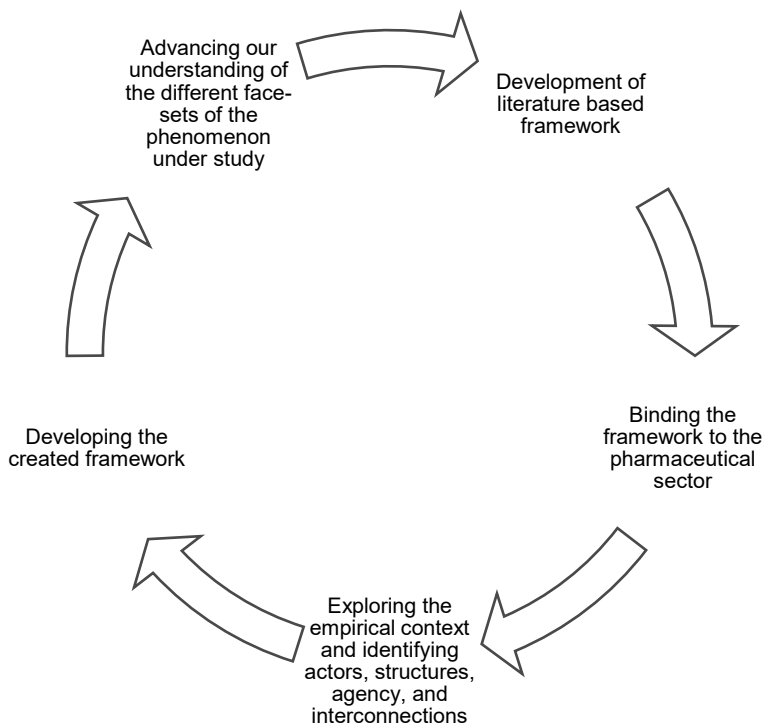


**Figure 4.** Research Process: Creating Understanding and Depth.

Article I studied first the complexity of change by examining the development of the pharmaceutical industry through a historical analysis (see Figure 5). This provided an understanding of the phases of change and the changes in the nature of complexity. However, returning to the literature on institutional complexity and further to the pharmaceutical industry context, it raised a question of the variety in institutional complexity and the possible consequences of this variation.
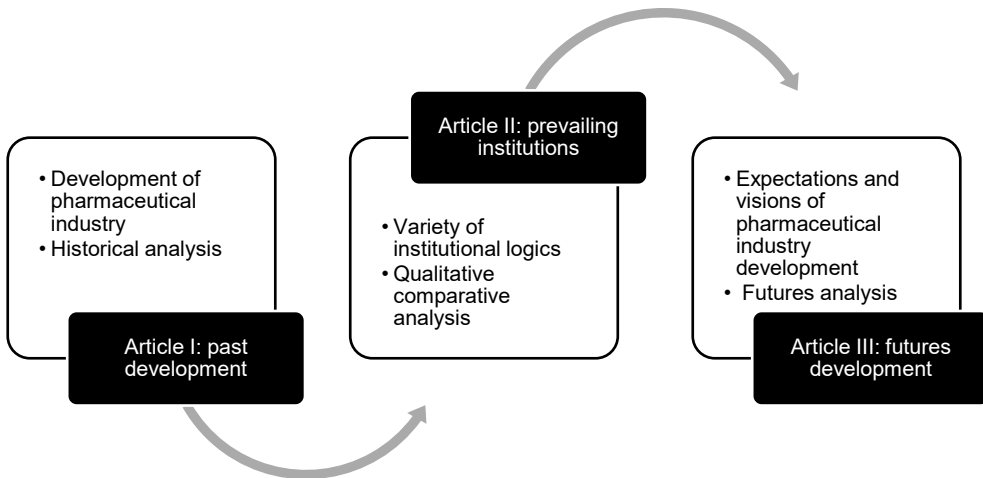
**Figure 5.** The Research Process.

Article II applied a qualitative comparative analysis method and focused on comparing the prevailing institutional logics configurations between different national pharmaceutical industry contexts. This advanced our understanding of the variety of the institutional logics. However, after returning to institutional complexity and institutional change literatures, they provided a new question related to the variety of institutional environments and the co-evolutionary changes of institutional complexity. Article III aimed at studying this via futures research methodology by exploring the expectations and visions for change related to the pharmaceutical industry.

## 3.3    Research Methodologies

Institutional logics is defined as "socially constructed, historical patterns of cultural symbols and material practices, assumptions, values and beliefs by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their daily activity" (Thornton et al., 2012, p. 51). Thus, institutional logics is contextual and translated by members embedded in their time and place. In IB studies, contextuality is strongly related to place, but to a lesser extent, our theorising takes the element of time into focus. This study focuses on a particular industry context and takes the element of time into consideration through a multimethod design. Thus, the multimethod design of the study observes the phenomenon in relation to different time perspectives of past, present, and future. The three methodological approaches applied were historical analysis, qualitative comparative analysis (QCA), and causal layered analysis (CLA).

Article I focused on the historical contingency of the change process and the co-evolution of actors and the structure with a historical research design. Article II focused on understanding the interinstitutional system and the diversity of complexity and its consequences within this particular sector in the European Union by applying qualitative comparative analysis (QCA). Article III focused on understanding the co-evolution of institutional complexity by examining the interactions of futures narratives. Thus, the change in institutional complexity at the industry level was studied from different time perspectives.

## 3.3.1    Historical Approach

Article I used a qualitative historical approach to investigate the co-evolution of the pharmaceutical sector and MNE. By analysing historical data, the study aimed to provide a better understanding of the dynamics of industrial change. A historical approach is appropriate as these processes take time to identify and follow as patterns and phases of change emerge. This approach emphasises the longitudinal dimension of qualitative research and the study of complex social systems, where individual events and actors interact to form systems that are greater than the sum of their parts (Burgelman, 2011).

The historical research approach supports the viewpoint of the institutional logics perspective and recognises the interdependence of components to identify their connections over time (Gaddis, 2002, pp. 53–55). Historians study the actions of individuals and groups that lead to significant events. They distinguish between patterns that are consistent over time and those that do not follow a pattern (Gaddis, 2002, pp. 30–31). Thus, this methodology allows for the recognition of inconsistencies that may exist and facilitates the identification of particular causal mechanisms (Jones & Khanna, 2006). Longitudinal studies analyse past events to identify significant changes in context and to examine the alterations in rules that led to the change (Burgelman, 2011). In this context, the analysis is centred on dynamics rather than on statics. The ever-changing economic, social, and political environments play a significant role in shaping firm strategies and organisations in significant and sometimes unexpected ways (Jones & Khanna, 2006).

Article I utilised a historically sensitive methodology and employed rich textual data sources to analyse institutional change and complexity beyond superficial, singular causal explanations (Suddaby et al., 2014). It was built on a qualitative inductive framework and was implemented as a retrospective longitudinal single-case study, which allows for deep contextualisation and the exploration of complex multi-level phenomena (Huber & van de Ven, 1995; Welch et al., 2011). The study followed the case company for a period of a hundred years during a time when the pharmaceutical industry transformed from craftsman production to a high-

technology industry. By comparing these developments with changes in the institutional environment, the study highlighted patterns and behaviours over a long time span retrospectively (a similar strategy was adopted by Birkinshaw et al., 2011; Voss et al., 2002).

*Historical case*. The case company was Orion Oy, a Finnish pharmaceutical MNE with a 100-year history. Orion is an exceptional case, as it is the only pharmaceutical producer that has maintained its operations and ownership in Finland. The analysis begins from 1917 with the establishment of Orion and concludes in 2007. In 2007, Orion returned to its original focus on pharmaceutical production, abandoning other unrelated business branches. This study analysed the changes in the pharmaceutical industry on three levels: (1) global, (2) national, and (3) firm strategy. At the global level, the study focused on Western welfare states at a global level, and at the national level, this study focused on Finland as it is the home market for the case company. Finland has a comprehensive healthcare system and a robust pharmaceutical production heritage.

*Data*. This study utilised a combination of primary and secondary sources. Primary sources refer here to document materials generated during the period under study. They encompassed annual reports, newspaper articles, and government documents relevant to the period in question (Lipartito, 2014). In addition, to obtain information on Orion Oy and other pharmaceutical manufacturers and distributors, this study utilised secondary sources such as historical records and books, from related industries such as chemistry and medicine. These sources offer analyses and written accounts of the past from a later perspective (Lipartito, 2014).

The documents offered multiple viewpoints of both the company's internal and external aspects to provide a thorough understanding of the institutional environment and the case firm. To ensure accuracy and credibility, data were gathered from three primary sources through triangulation (Flick, 2004; Yin, 2013). Firstly, the data included documents produced by the case company, including annual reports, historical books, webpages, and company publications from 1917 to 2007, some of which were obtained from the company's archives. Secondly, the data included documents external to the case company, such as reports on the industry, ministry reports and statements, industry associations' reports, and reports and books published by other Finnish pharmaceutical companies. Thirdly, data were gathered from media materials, such as newspaper and industry magazine articles related to the industry and the case company.

The study primarily utilised documents sourced from publicly available materials, which primarily represent the perspective of top management within the company. In addition, industry-related materials are heavily influenced by expert viewpoints. To mitigate the risk of bias towards a single perspective, data

triangulation is employed through the use of information from multiple sources produced for different purposes (Kipping et al., 2014).

*Analysis*. On the firm level, the information gathered was analysed using two strategies: temporal bracketing (Langley, 1999) and the critical incident technique (Butterfield et al., 2005; Flanagan, 1954). The analysis began by creating a timeline using the available materials and identifying critical incidents. This was conducted by comparing Orion's annual reports, competitor's annual reports, and industry reports to analyse how these incidents were discussed in various documents. Through this, the critical incidents were identified. In addition, the analysis included identifying changes in the content and writing style of the reports. For example, the company's annual reports developed in regards to the topics presented and from a formal to a more narrative writing style. The temporal bracketing involved going back and forth with the different levels under study to identify interconnections and timing of events. The critical incidents identified at a firm level were compared with industry- and global-level trends to identify the case firm's strategy development stages within the institutional environment. Examining the documents related to global and industry levels from different periods provided insights into the industry's development and included different perspectives such as the medical and plastic industry perspectives. This approach allowed viewing the industry's development in the context of different eras and viewpoints (Yates, 2014). This provided a better frame of reference for a more comprehensive analysis.

In the following phase, the developed theoretical framework was applied to code the data and establish a connection between the identified changes and the ideal types of institutional logics. This process encompassed recognising changes in firm strategy, industry-level transformations in Finland, and global changes across the entire industry that were connected with the characteristics of the ideal types of institutional logics (Thornton et al., 2012). The analysis was divided into three narratives that illustrate the changes at every level. The aim was to identify critical events, patterns, and connections that shape the industry and firm strategy. This made it possible to see how institutional logics have changed and how they are interconnected with institutional change.

### 3.3.2    Configurational Approach

Article II applied a fuzzy-set QCA (fsQCA) to examine the variety of the present institutional complexity at the national industry level. Earlier studies have suggested fsQCA as a viable alternative to the traditional regression analysis approach in location choice research (Kim & Aguilera, 2016; Ott et al., 2018; Pajunen & Aro, 2013; Ragin, 2008). QCA is a configurational research approach based on Boolean algebra (Ragin, 2008). It does not clearly belong to either qualitative or quantitative

methodologies but forms an alternative research approach. QCA focuses on analysing causal complexity composed of conjunctural causation, equifinality, and causal asymmetry (Misangyi, 2016). Conjunctural causation refers to an assumption that the phenomenon is configurational, which means that to produce the outcome of interest, multiple causal attributes must be combined (Ragin, 2008). Equifinality refers to the assumption that multiple configurations can be linked to the same outcome (Ragin, 2008). Causal asymmetry refers to the assumption that both the presence and absence of causal attributes may influence the outcome, and that the causal attributes may be associated with other outcomes even opposite ones (Ragin, 2008). Thus, QCA provides analytical tools for exploring the variety of institutional complexity.

QCA has been used across multiple disciplines. In IB studies, the application of QCA has been limited (Fainshmidt et al., 2020). Earlier studies using fsQCA have examined themes such as the attractiveness or unattractiveness of FDI (Pajunen, 2008), subsidiary strategies and stakeholder orientations (Crilly, 2011), or stock market responses to different constellations of firm-level corporate governance mechanisms (Bell et al., 2013). Pajunen and Aro (2013) applied fsQCA in the pharmaceutical industry context to study country-specific advantages and industry performance of the European generic medicines industry. Their study highlighted that pharmaceutical companies in the generic medicines industry have the possibility to take advantage of the differences in the markets even within Europe.

Article II applied fsQCA to examine how various combinations of complementary institutional dimensions impact the FDI attractiveness of an industry. The analysis concentrates on market attractiveness as the contextual factor rather than on the company decision-making process itself, thus emphasising the principle of equifinality. By examining different configurations of causal conditions, fsQCA can identify multiple possibilities for an attractive market. This is accomplished by analysing the set memberships within each case (Fiss, 2011; Ragin, 2008).

In this study, the national pharmaceutical industry environments form the cases and are considered constellations of interconnected institutional logics. This study focused on selected EU countries. As the aim was to study the variety of institutional environments in relation to co-evolutionary change, FDI attractiveness was selected as an outcome variable. FDI requires commitment from MNEs and therefore increases interaction with the host-country business environment and institutional development. The societal-level institutional orders within the pharmaceutical industry form the causal conditions: market, profession, state, corporation, family, and religion. These orders vary in each country and create a set of characteristics that form the rules of the game for the country's pharmaceutical industry affecting the attractiveness of FDI in that market. In line with the assumptions of the

configurational perspective, causality is seen as complex in this conceptualisation of the institutional environment (Misangyi, 2016). To assess a country's membership in these sets, this study focused on the structural dimensions of institutional complexity, such as fragmentation, formal structuring/rationalisation, and centralisation/ unification. This allowed to capture the differences in kind and degree among the cases. By observing the multiple pathways that lead to similar outcomes, it is possible to better understand the complexity of the institutional environment.

*Data* for each case on their outcome variable and causal conditions are gathered from public databases and reports including the OECD, Statista, academic research, consultancy reports, EU reports, and the websites of national authorities and professional associations. Therefore, the data set used included both quantitative and qualitative data that was used for calibration of the memberships of the cases. The coding of the set memberships of the cases requires strong theoretical arguments to translate the data according to these key qualitative anchors (Misangyi, 2016; Ragin, 2008). In this study, coding relied upon the academic literature on institutional complexity and complex adaptive systems, the practitioner literature on the pharmaceutical industry, and the data itself on the specific national pharmaceutical industries.

*Analysis*. QCA has four essential steps: (1) data calibration, (2) examination of the necessity and sufficiency of conditions, (3) formation of the truth table, and (4) minimisation to find configurations for an outcome (Leppänen et al., 2019; Vuorio et al., 2022). These steps can be carried out using specific software. In Article II, the fsQCA -software was applied (Ragin et al., 2006). In the calibration, threshold values for raw data are set to define the cases belonging to the 'fully in' and 'fully out' membership class in each condition and the cross-over point that determines the point at which raw data are considered to be more out-category than fully in-category (Ragin, 2008; Douglas et al., 2020). Essentially, calibration transforms raw data into a range of values between 0 to 1, where 0 denotes full non-membership (fully out) and 1 denotes full membership (fully in). In Article II the cases and their fuzzy membership scores were calibrated using four-value fuzzy sets (1.00, fully in; 0.67, more in than out; 0.5, neither in nor out; 0.33, more out than in; and 0.00, fully out) (Ragin, 2008). The principles for calibration in this study were based on the theoretical framework building on the conceptualisation of the interinstitutional system and industry reports (see Article II for details). The truth table was formed following the recommendations of earlier studies regarding setting a consistency threshold (0.7) and proportional reduction in the inconsistency threshold (0.6) (Douglas et al., 2020; Fiss, 2011). Consistency refers to 'the acceptable level of dissimilarity' within a configuration connected to the outcome (Douglas et al., 2020). The fourth step in QCA, minimising the outcomes, has generally three types of solutions: (1) complex, (2) parsimonious, and (3) intermediate solutions (Ragin &

Sonnett, 2005). A complex solution, usually labelled as a conservative solution, is formed on the basis of the observed data and hence contains only empirical configurations (Schneider & Wagemann, 2012). A parsimonious solution encompasses all possible configurations, including logical reminders that are theoretically feasible but not present in the observed data (Vuorio et al., 2022). The purpose of these logical reminders is to generate the most straightforward solution possible by simplifying assumptions (Thiem, 2015). The directional expectations are estimates about the role (0 or 1) that a condition has on an outcome, and they are defined by the researcher on the basis of theoretical and case-based knowledge. It is important to identify and eliminate untenable simplifying assumptions before creating an intermediate solution, as some of these assumptions may not be useful in the minimisation process. It is crucial to avoid theoretically impossible assumptions. Article II reports the parsimonious solution and includes all theoretically possible solutions, as the aim here is to further understand the variety of configurations of institutional logics.

### 3.3.3    Futures Focused Research Approach

Article III focuses on understanding the interconnectedness of the ideas of futures between pharmaceutical actors, healthcare actors, and patients by building on futures studies research approach and the conceptualisation of interinstitutional system and how they are manifested within different fields.

Futures studies offer analytical tools and methodological perspectives to explore complex phenomena. As the field of futures studies is built to deal with the lack of first-hand data and to extrapolate views from fractions of evidence, it offers great potential to observe beyond the taken-for-granted assumptions we hold and to explore the possible hidden assumptions or to identify the not known unknowns (Fergnani, 2019). Thus, creating an opportunity to develop a holistic view of industrial change by enabling the contextualization of knowledge and the mechanisms of co-evolution and inter-consistent sustainable development of different complex systems in the world (Knyazeva & Kurdyumov, 2001). As the world becomes increasingly heterogeneous, as events from faraway places dramatically impact how, where, when, why, and with whom we live and work, futures studies can help to identify agency (Inayatullah, 2008). Thus, the agency here refers to our ability to create the world in which we wish to live (Inayatullah, 2008). This need echoes the increased call within IB studies to further understand the role of MNEs in solving grand challenges (George et al., 2016).

Futures can be approached from multiple perspectives: by mapping the past, present, and future; by anticipating future issues and their consequences; by being sensitive to the grand patterns of change; by deepening our analysis to include

worldviews and myths and metaphors; by creating alternative futures; and by choosing preferred and back-casting ways to realise the preferred (Inayatullah, 2008). Article III applied CLA combined with theory-driven content analysis. CLA divides futures into four layers: (1) litany, (2) system, (3) worldview, and (4) metaphor (Bishop et al., 2013; Inayatullah, 1998). Litany refers to everyday life in which we operate according to our habits, obey rules, and get on with our lives (Inayatullah, 1998; MacGill, 2015). System refers to social causes such as economic, cultural, political, or historical factors that give meaning to facts/data (Haigh, 2016; Inayatullah, 1998). Worldview is concerned with ideologies and paradigms that support or challenge the status quo and refers to deeper social, linguistic, and cultural structures that are not dependent on who the actors are (Heinonen et al., 2017; Inayatullah, 1998). Metaphor, or the mythic layer, deals with the unconscious and deep stories, collective archetypes, and images that give meaning to disconnected events and are often difficult to articulate in words (Heinonen et al., 2017; Inayatullah, 2004). These layers are interconnected, and it is crucial to move back and forth between them in the course of analysis (Heinonen et al., 2017; MacGil, 2015).

Article III combines the conceptualisation of the interinstitutional system and CLA into an analytical framework to investigate the dynamics of the interinstitutional system. As the institutional logics perspective views society as an interconnected system of multiple logics, the approach broadens the ability to analyse how to influence complex systems and to go beyond describing or modelling these systems to evaluating the potential effects of interventions caused by dynamics related to changes in the interconnected system (Rutter et al., 2017). This is done by exploring the future visions of the identified three sectors based on related research, industry reports, company reports, and state reports to identify synergies and contradictions at different time dimensions to explore the possible futures of the pharmaceutical industry.

*Data*. Article III is based on textual data derived from four major resources: (1) academic research-based articles and book chapters focusing on pharmaceutical industry, healthcare, and health futures; (2) industry reports and books produced by global actors such as the WHO and UNCTAD, healthcare and pharmaceutical industry associations, consulting firms, and industry experts; (3) reports produced by national authorities on healthcare and the pharmaceutical sector; and (4) reports and news produced by pharmaceutical companies and pharmaceutical industry-related hubs such as biotech hubs or science parks. The search of the materials has focused on futures from the present time perspective, therefore limiting the search to materials produced between 2015 and 2019. The search excluded the influence of the COVID-19 pandemic. The database for analysis included (1) 50 academic

research-based documents, (2) 44 global-level documents, (3) 32 national-level documents, and (4) 6 company-level documents.

*Analysis*. The aim of the analysis was twofold: to explore the futures of the pharmaceutical industry and to advance our understanding of the institutional complexity of industry-level changes. The analysis applied the built analytical framework and was conducted in three phases.

The NVivo analysis tool was used to conduct the first and second part of the analysis using a coding grid based on the built analytical framework (see Table 3). The identified three spheres related to the pharmaceutical industry formed the cases in NVivo, and the four levels of CLA formed the codes. In the first phase, the document material was analysed and coded by identifying facts, narratives, and descriptions of challenges or solutions related to 1) the day-to-day level; 2) society, policy, and economic level; 3) the big picture; and 4) the deep unconscious story. This was done through content analysis. In phase two the coded data was categorised into the cases providing a collection of expected and ongoing developments within these three spheres grouped into the four layers of CLA.

**Table 3.** Analytical Framework-based Coding Grid for the NVivo Analysis.

| Level\ context | Technology & science (T) | Healthcare system (HC) | Health (H) |
|---|---|---|---|
| Litany (L): day-to-day future, how things are or should be | LT | LHC | LH |
| Systemic causes (S): the social, economic, political causes of the issue | ST | SHC | SH |
| Discourse/worldview (W): the big picture, what we think is real or not real, the cognitive lenses we use to understand and shape the world | WT | WHC | WH |
| Myth/metaphor (M): the deep unconscious story | MT | MHC | MH |

In the third phase, the data was mapped to identify themes from each of the three spheres and the four depths of futures. The mapping was done by presenting the different levels of CLA for each sphere as a figure of factors extending from the day-to-day -level to the myth/metaphor -level. These mappings were then cross-analysed to find synergies, taken-for-granted themes, overlaps, and contradictions in both the timing and themes to evaluate the potential magnitude and pace of change. Through, this analysis emerged the futures trajectories of the pharmaceutical industry.

## 3.4     Evaluation of the Study

The quality of the research and methodological choices include the evaluation of whether the research has been conducted in a rigorous, systematic, and ethical manner and whether the results can be trusted and applied in practice. The trustworthiness and authenticity of this study will primarily be evaluated by employing the criteria of credibility, transferability, dependability, and conformability (Lincoln & Guba, 1986).

Credibility refers to having data that accurately reflects the phenomenon (Shenton, 2004; Lincoln & Guba, 1985). This can be enhanced with a number of measures. In this study member checking was used by conducting supportive interviews with industry experts to evaluate the understanding gained from the document materials (Lincoln & Guba, 1985). In addition, both data and methodology triangulation were central parts of the research approach to gain multiple viewpoints on the phenomenon under study (Shenton 2004; Lincoln & Guba, 1985). In Article I, the materials related to each level of analysis also included those that were produced and reflected the perspectives other than the focal entity under study. For example, the narrative for the case company included, in addition to the company's reports, competitors' reports, industry reports, and news articles. In Article II, the source of data for each analytical unit was selected on the basis of both theoretical and industry reports. The analysis contained multiple data points for each analytical unit to reflect the different institutional logics holistically. In Article III, the data for analysis were searched from documents and reports produced by three different entities: (1) companies, (2) industry experts, and (3) researchers. These data collection strategies aimed to ensure that the data accurately and holistically reflected the phenomenon. In addition, peer debriefing (Shenton 2004; Lincoln & Guba, 1985) was conducted as a part of the journal publication processes, and through conference presentations.

Transferability refers to the study being conducted in a manner that provides enough context for readers to gather similar results in their own context (Shenton 2004; Lincoln & Guba, 1985). This was enhanced by a detailed description of the research design, documentation of data collection, and analysis processes (Lincoln & Guba, 1985). For Article I, applying a historical research approach, transferability stemmed from the thick description of the phenomenon under study (Shenton 2004; Lincoln & Guba, 1985). For Article II, transferability stems from the reporting of the analysis process and decisions made during the analysis. For Article III, transferability was enhanced by a detailed description of the analytical framework and the analysis process.

Dependability refers to consistent findings that could be repeated (Lincoln & Guba 1985). This study followed the idea of an audit trail by documenting the steps and processes during the qualitative investigation (Shenton, 2004). This was

conducted by making notes of the decisions related to the data collection and analysis processes. For Article I, the analysis process was documented in the form of research notebooks and mind maps. For Article II, the data-gathering process and decisions made were documented in Excel, and the analysis was conducted using the fsQCA analysis tool. For Article III, the research analysis tool NVivo was used to code the data, and the layers were further analysed by using mind maps.

Confirmability refers to ensuring that findings are shaped more by data than by researcher biases (Lincoln & Guba 1985). The reflexivity of the researcher and research processes can develop confirmability (Shenton, 2004). In this study, the researcher can be considered an outsider to the industry context studied, and the researcher engaged in dialogues with other researchers throughout the research process, naming one's positionality within the write-up of the study (Lincoln & Guba 1985). In addition, the study progressed gradually, reflecting with the research data and theoretical framework back and forth to ensure that the findings stem from the data.

Ethical considerations are essential for all types of research. This study applied mostly publicly available research materials. When conducting the background interviews the anonymity, privacy and confidentiality of the individual participants were taken into consideration (Bryman & Bell, 2007). Although the research material for this study was collected mostly from public sources, it was handled according to the University of Turku guidelines for data privacy to minimise social or financial harm to the related companies or organizations. In this study I did not collect any financial data or record any situations or communication involving customers or transactions.

# 4 Research Findings

## 4.1 Article I: Institutional Complexity and Co-evolution

Article I studied the co-evolutionary nature of the changing institutional complexity. The article explored the first sub-question of how firm strategy development and industry-level institutional complexity evolve together. It is built on a historical analysis of the pharmaceutical industry's development from the early 20th century to the early 2000s. The paper presents three narratives on different levels of the pharmaceutical industry: the global pharmaceutical industry, the national pharmaceutical industry, and an individual pharmaceutical MNE. The analysis was based on the built theoretical framework aimed at capturing the co-evolutionary dynamics of MNE and institutional complexity and focused on the interactions between the three narratives.

The analysis identified the different institutional logics at play at different time periods and the interconnectedness of the events between the different levels (see Figure 6 for a summary of the findings). First, as pharmaceutical production industrialised, the market and professional logic-driven industry of networked independent pharmacists developed into market and corporate logic-driven industry based on MNEs. This change in institutional logics stems from the change in institutional complexity. The professional logics reflected in the strong power of physicians and pharmacists within the pharmaceutical industry characterised the networked independent pharmacist-based industry structure. The professional logics aimed at stabilising complexity emerging from the need and ability to take care of more local diseases and illnesses and upkeep specialised knowledge and know-how. Owing to the possibilities brought by developments in the fields of both chemistry and technology, the institutional complexity changed. The increase of new types of technologies and specified knowledge required new ways of organising rather than just through independent pharmacists producing medicines for local use with traditional methods such as extracting from plants. Therefore, the need for the prevailing institutional logics changed, creating new types of structures in the form of corporate logics that enabled more efficient means to coordinate know-how and to serve wider needs. Here, the overlap of jurisdiction was between the profession

and corporate logics that provided pressure for actors to balance between the individual pharmacist as an expert and the need and increasing ability to provide new types of pharmaceuticals to wider populations.

| *Institutional complexity* | *Between profession logics and corporate logics* | *Between corporate logics and state logics* | *Between state logics and market logics* |
|---|---|---|---|
| **Pressure** | Technological and scientific developments enabled new opportunities for developing pharmaceutical production | The increasing number of new pharmaceutical products and operators increased the availability of medical products leading to the need for more systematic regulation | Globalizing of the pharmaceutical markets increased competition and the availability of new pharmaceutical products increased the costs of treatments |
| **Change at the industry level** | Individual pharmacist » multinational enterprises | Development of health market regulations and healthcare systems | Networked production and global value chains » specialization and concentrated production of pharmaceutical compounds |
| **Change at the MNE level** | Developing into an industrialized international company | Developing into networked MNE | Stronger focus on pharmaceutical manufacturing |
| | 1900 | 1950 | 2000          2010 |

**Figure 6.** Co-evolutionary Change of Institutional Complexity.

Second, pharmaceutical production was industrialised, and the amount and number of pharmaceutical products increased rapidly. This development changed the pharmaceutical market and the availability of pharmaceutical products, as well as the range and purposes they were used for. This caused a need to guarantee the safe use of medicines and a system to verify the quality of these products. Corporate logics was challenged by state logics. State logics stemmed from the need to guarantee the safe use of pharmaceuticals and from the development of the healthcare sector as a whole. The new types of medicines in the form of vaccines and antibiotics increased the interest of governments in national-level health. The state logics emerged in the form of new regulations, quality criteria, and responsible government agencies to balance business activities and healthcare needs. The regulations and government agencies related to pharmaceuticals increased, and enforcement became more hierarchical and centralised in its structure. This new complexity created pressure for pharmaceutical companies to further develop their products and production quality, increasing R&D costs and

extending the time of R&D processes. In this phase of industry development, the corporate logics were accompanied by the state logics to further bring stability to the increasing possibilities of new emerging pharmaceuticals and treatments.

Third, the pharmaceutical market developed to be more global as MNEs searched for new markets and innovations globally to improve their competitiveness in the tightening competition. This further tightened the competition and led to consolidation and increased internationalisation pressures. The pressure for internationalisation was enhanced by the opening up and deregulation of the global economy. In addition, the increasing possibilities for medical treatments and new, more sophisticated pharmaceutical products increased healthcare costs for governments. Therefore, the institutional logics of markets strengthened their role by providing new opportunities for growth and demand for cooperation. The increasingly global and interconnected market provided opportunities for the needed collaboration and led to specialisation. Specialisation was also strengthened by the emerging new technologies creating new related industries such as biotechnology and nanotechnology. These new technologies added to the pile of knowledge needed to develop new pharmaceuticals, the role of cooperation and networks increased, and larger global value chains developed. This led to the concentration of specific types of production of pharmaceutical compounds and strong dependencies on raw materials. In this development phase of the industry, the market and state logics caused conflicting demands through the increasing costs and regulations, and the MNE strategies to gain new ways to increase competitiveness.

From these results, we can conclude that the co-evolution of MNE strategy and institutional environment stems from the interplay of changes in institutional pressures and organisational responses, creating the cycle of adaptation and selection. In this interplay, changes in institutional complexity are critical, as they provide the space for agency and the possibility and need to change the prevailing institutional logics. Thus, the adaptation of companies is not only a passive response to institutional pressures but can actively shape the environmental selection criteria. However, as this study shows, this process is not straightforward. The changing institutional complexity stems from the changes in different but interconnected industries and sectors. Therefore, owing to the interconnectedness of these different industries and sectors, development is constant. When a new structure stabilises one set of institutional complexity, changes in related industries or sectors generate new pressures that demand new responses from MNEs. This creates a continuous cycle of co-evolutionary institutional changes.

## 4.2 Article II: Institutional Complexity and Institutional Change

Article II studies how the variety of different field-level institutional logics influence foreign direct investment attractiveness. The article argues that it is necessary to

further understand the complexity of the institutional environments faced by multinationals for MNEs to cope with the increasing uncertainty from business environments (Bozonelos & Tsagdis, 2023). Building on the institutional logics perspective (Thornton et al., 2012) and the literature on institutional complexity (Greenwood et al., 2011), the study created a framework for QCA. The study applied a fuzzy-set analysis to identify multiple different institutional configurations that can lead to FDI attractiveness.

Inward FDI and FDI attractiveness have been extensively studied by IB researchers. Earlier approaches have mostly focused on more macro-level characteristics of institutional environment and on more traditional research approaches focusing on linear causality. Although these studies have established the clear interconnection between institutions and FDI attractiveness, they have not advanced the understanding of the complexity of the context at the industry level, as they do not allow for consideration of the multiple configurations that might lead to similar outcomes (Bailey, 2018; Jackson & Deeg, 2008). Article II studied selected European national pharmaceutical industries.

The analysis of Article II was based on the idea of an interinstitutional system. On the basis of the academic research and pharmaceutical industry literature, the study identified the characteristics of the different institutional logics of the pharmaceutical industry. Building on the identified six characteristics and using national-level pharmaceutical industry data, a fuzzy-set analysis was performed. Table 4 summarizes the results.

**Table 4.** Configurations of Pharmaceutical industry conditions attracting FDI.

| Configuration | Causal conditions | Description |
|---|---|---|
| Configuration 1 | + Market<br>+ Family | In this configuration, the industry is characterized by market-driven demand with a higher share of private consumption and investments. This is accompanied by strong industry networks and clusters. |
| Configuration 2 | + Corporate<br>+ Profession | This configuration is characterized by the strong presence of large MNEs and fewer domestic companies. The pharmaceutical industry is supported by a strong education system and appreciation of pharmaceutical professionals. |
| Configuration 3 | - State<br>+ Profession<br>+ Beliefs/Traditions | This configuration has also a strong education system and appreciation of pharmaceutical professionals. Also, alternative medicines are regulated for specific purposes. The government incentives for pharmaceutical production and sales are relatively low. |
| Configuration 4 | + Corporate<br>+ State<br>+ Beliefs/Traditions | In this configuration, MNEs have a strong presence, and the government incentives include multiple types of incentive tools. In addition, alternative medicines are regulated for specific purposes. |

From the results, four paths for FDI attractiveness were identified: 1) Market AND Family, 2) Corporate AND Profession, 3) Not-State AND Profession AND Beliefs/Traditions, and 4) Corporation AND State AND Beliefs/Traditions. Paths 1 and 2 refer to stability from strong normative rules of the industry. However, path 1 stems more from the business actors' interactions, and path 2 stems more from the ability to organise and develop knowledge and know-how. Path 3 implies that the lack of strong state-provided support structures can be overcome by strong, more value- and certainty-based institutional logics that provide strong bases and stability for an industry. Path 4 also suggests that strong government-driven stability can provide an attractive market for FDI. Thus, Article II highlights that the stability of the institutional environment can stem from multiple institutional characteristics.

Experienced institutional complexity depends on the degree of institutional logics incompatibility, the extent to which they are prioritised in the field, and the level of their jurisdictional overlap (Raynard, 2016). Thus, it is necessary to explore in more depth the institutional complexity at the organisational field level. As earlier studies have emphasised differences and distance on a macroeconomic level might not provide a satisfactory understanding of MNE location choices, success/failure, or strategic variation. Within the institutional complexity literature is a need to further understand institutional complexity at the organisational field level (Greenwood et al., 2011).

The industry-level institutional complexity faced by MNEs in their different host markets can be of different types requiring diverse types of organisational structures and/or strategies and adequate analytical framings. Thus, it is necessary to explore in-depth the institutional environment faced by MNEs and to understand in more detail the dimensions of institutional complexity. Therefore, contextualising the institutional setting in the case of an MNE deserves research attention for theorising and theory development.

Exploring the different forms of institutional complexity and their implications for MNEs offers more possibilities to differentiate and thus compare institutional contexts beyond the national level. In addition, by identifying in more detail how and why institutional contexts differ, the framework and method of analysis will offer a more systematic strategy to recognise and capture the multiple contexts of MNEs characterised by different opportunities and constraints (Raynard, 2016; Meyer et al., 2011). Further research is needed to understand the complex interrelationships more fully between patterns of complexity and key industry-level phenomena.

## 4.3 Article III: Institutional Change and Co-evolution

Article III aims to provide a better understanding of institutional change as a co-evolutionary process of different interrelated change trajectories. It focuses on the third sub-question of the thesis: How does institutional change at the industry level develop at the intersection of different institutional fields? The paper builds on the institutional logics perspective (Thorton et al. 2012) as a theoretical frame. Institutional logics views society as an inter-institutional system that builds meaning and frames for our beliefs, decision-making, goal setting, and perceptions of challenges. This inter-institutional system comprises different competing, overlapping, and mutually existing institutional logics. This view thus considers institutional change not only as a change from one set of rules to another set of rules but also as a more evolutionary process taking place through incremental changes. It also acknowledges that institutional changes stem from multiple mechanisms, incidents, and actors at different levels. Therefore, institutional change is a complex co-evolutionary process, and it is difficult to plan or predict how it will unfold. Earlier institutional studies have emphasised historical approaches rather than future-focused analysis. Thus, this study aims to further understand institutional change by exploring envisioned futures and their interconnections.



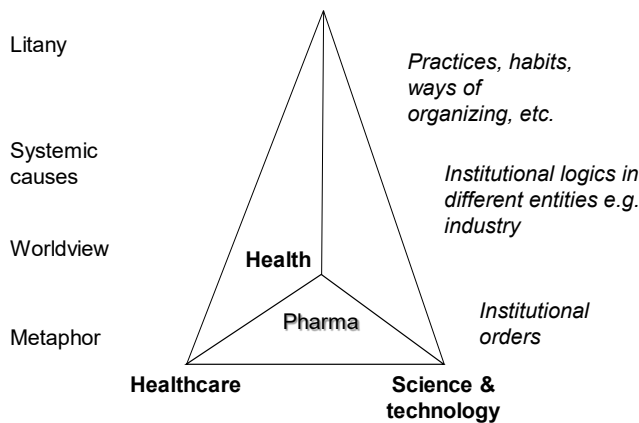**Figure 7.** The Pharmaceutical Industry at the Interconnection of Science and Technology, Healthcare, and Health.

This study analysed interconnections between the ongoing changes of the three institutional logics spheres related to the pharmaceutical industry (Figure 7). This analysis identified three futures trajectories: (1) expansion of innovations, (2) personalisation of demand, and (3) intensified collaboration.

*Expansion of innovations* can be categorized into three paths: (1) depth, (2) function, and (3) width. The first path, depth, involves finding new ways to deliver treatments that would reduce the need for hospitalisation. The pharmaceutical industry is driven by the need for efficiency and speed in the innovation process, which is why new technological advancements such as AI and neural networks are being explored to develop more accurate and personalised treatments (e.g. Aquino et al., 2018). These developments will also lead to a shift towards preventive care, which will engage patients and citizens in healthcare management. As a result, life-threatening diseases such as cancer and heart and circulatory system diseases, can be prevented. While these changes offer opportunities for the pharmaceutical industry, they may require a drastic shift in the way companies operate. For example, the manufacturing of simpler medical compounds could return to pharmacies owing to the opportunities of 3D printing (e.g. Awad et al., 2018). Moreover, the restructuring of healthcare systems from treating masses to treating individuals could make smaller disease groups more attractive markets to tap into. The second path, function, involves opening up new roles for pharmaceutical companies to be more directly involved in healthcare. This could lead to a significant change in the healthcare industry, especially in developing economies, where heavy centralised systems are unnecessary (e.g. Büchs & Koch, 2019; Casares, 2018). This development could also make drug development more lucrative for illnesses that are prevalent in developing countries. The third path, width, involves a wider perspective of health as a social good. With the demand for sustainable food production, pharmaceutical companies have the opportunity to provide their expertise on the microscale and nanoscale to develop efficient and sustainable systems (e.g. Kappenthuler & Seeger, 2019). These developments could even lead to the possibility of food production being isolated from nature.

*The demand for personalised healthcare* is driven by three changes: (1) the development of diagnostics (e.g. Tarkkala, Helén & Snell, 2019), (2) patient-driven healthcare systems (e.g. Tansim et al, 2018), and (3) a shift from a focus on health to wellness (e.g. Mesko, 2019). Recent advancements in science and technology, such as genealogy and nanotechnology, have created new possibilities for diagnostics. Wearable or in-body devices enable continuous and routine measurements for diagnostics, which leads to new preventive care services. This shift towards patient-focused healthcare means that treatments and medicines are becoming more personalised. The demand for healthcare is shifting from hospitals and physicians to consumers and prevention. Health is no longer just the absence of illness but a holistic approach to wellbeing, which is supported by technological advancements that enable continuous and accurate measurement of physiological wellbeing. This shift creates new markets for the pharmaceutical industry and requires treatments that can be operated outside of hospitals. In the future, healthcare

systems may integrate both hospital care and privately provided equipment for personalised care.

*Intensified collaboration* merges the interfaces of the pharmaceutical industry – patient – healthcare. This development trajectory will need wide system-level changes that are not possible without developing regulations. The prevailing regulation model in most developed economies clearly regulates the rights and obligations of each actor group. Thus, the regulation assigns the actor who would carry responsibility, whether related to treatment, medicine, or data. To develop these new services or products, a new perspective on the actors' roles is needed. For example, in hospitals, hierarchical decision-making assigns the responsibility of the decisions to specific positions. This would be difficult in a healthcare system that is more autonomous and decentralised. In addition, the increasing use of AI-based decision-making in healthcare will require new regulation (e.g. Schmidt, 2017). For pharmaceutical companies, this will provide new opportunities, as there is a clear need to better integrate public and private systems. The new regulation would need to guide the interconnections of private and public systems regarding technology, care, safety and responsibility aspects. The renewing of regulations and the systemic change from hospital-centred to a more de-centralised system are difficult tasks, and the pace of change becomes critical (e.g. Wepner & Giesecke, 2018). Many technological advancements are still in their infancy, but to develop these would require an enabling regulation environment. In the healthcare and pharmaceutical contexts, the development of regulation usually requires a clear evidence base, thus making the change slow, and the investment for pharmaceutical companies through that is very risky, as it might be putting eggs in the wrong basket. However, wide-scale collaborative projects where the risks are shared, and both public and private actors are part of the process might generate space for the new structures to emerge.

Exploring the dynamics and possible futures of interconnected systems is challenging, and there is an evident need to avoid oversimplification to provide robust and relevant evidence that takes adequate account of real-world complexities (Rutter et al., 2017). Pharmaceutical companies face the contradictory pressures of operating a private business and working towards the public good. The strong trend of consolidation within the pharmaceutical industry will most likely continue until the regulatory and systemic changes within the healthcare sector develop to boost growth for new types of pharmaceutical companies operating in intersections of industries such as electronic or geology companies.

The pharmaceutical industry's structure is closely tied to regulations that establish formal operational rules. Changes in these regulations, whether due to advancements in technology and science, healthcare, or health developments, can create new opportunities for change within pharmaceutical companies, potentially leading to more de-centralised structures. While pharmaceutical products have

traditionally included medicines in various forms, ongoing developments and changes in the understanding of health as wellness and healthcare as a shared task of individuals and professionals could lead to new combinations of products and services.

The developments explored here strongly focus on the developed economies but offer opportunities for developing economies, as they might provide new solutions to organise high-quality and available healthcare services. These changes will need a shared understanding of the development between the different actors, from pharmaceutical companies, state authorities, and professionals such as physicians and pharmacists to patients.

## 4.4 Synthesis: Co-evolutionary Institutional Change of Pharmaceutical Industry

This study built a theoretical model of the institutional change of the pharmaceutical industry as a co-evolutionary interplay between institutional complexity and MNEs. The framework was developed from the research results reported in the three articles (summarised in Figure 8). The results highlight three characteristics of co-evolutionary institutional change.

First, in the summary figure, the styles of circle lines reflect the differences in the pace of change between the different units of change. The entities that develop at a similar pace are more likely to co-evolve than the entities with very different paces of change (Micelotta et al., 2017). For example, in Article I, the changes in the institutional logics of the pharmaceutical industry partly stemmed from the pace of acceleration, that is, the rapid increase of pharmaceutical products and production technologies or the increase of regulations for pharmaceutical R&D by the related authorities. In Article II, the rapid technological developments in AI and increasing scientific knowledge combined with the slower pace of regulatory developments created challenges for industry development that can hamper investments and thus slow down R&D activity. Thus, co-evolution does not strengthen the development between these two entities.

Second, institutions are a multilevel phenomenon, and change can stem from multiple triggering events from different levels (Greenwood et al., 2011; Micelotta et al., 2017). The results of this study emphasise the role of institutional complexity from the multiple simultaneous institutional demands in providing variety that enables agency at the MNE level. The results presented in Article II suggest that configurations of multiple institutional logics can lead to the desired outcome. This variety creates opportunities for MNEs to strategize differently and provides industry-level heterogeneity to organisations that is necessary for co-evolution (Volberda & Lewin, 2003; Wilson & Hynes, 2009).

Third, the interactions between the multiple levels emerge through the selection by the prevailing institutional logics, institutional complexity at the industry level, and the adaptations at the MNE level. This guides the activities of organisations and individuals (Thornton et al., 2012). In Article I, the changes in the institutional logics of the pharmaceutical industry emerged from the developments at the industry level that influenced the strategic developments of MNEs. Article III shows that the changes at the industry level emerged as a co-evolutionary process of multiple interrelated development trajectories. These interactions influence the institutional complexity that creates pressures for MNEs to develop their strategic responses. These responses then influence industry development and may further change the institutional logics of the industry.



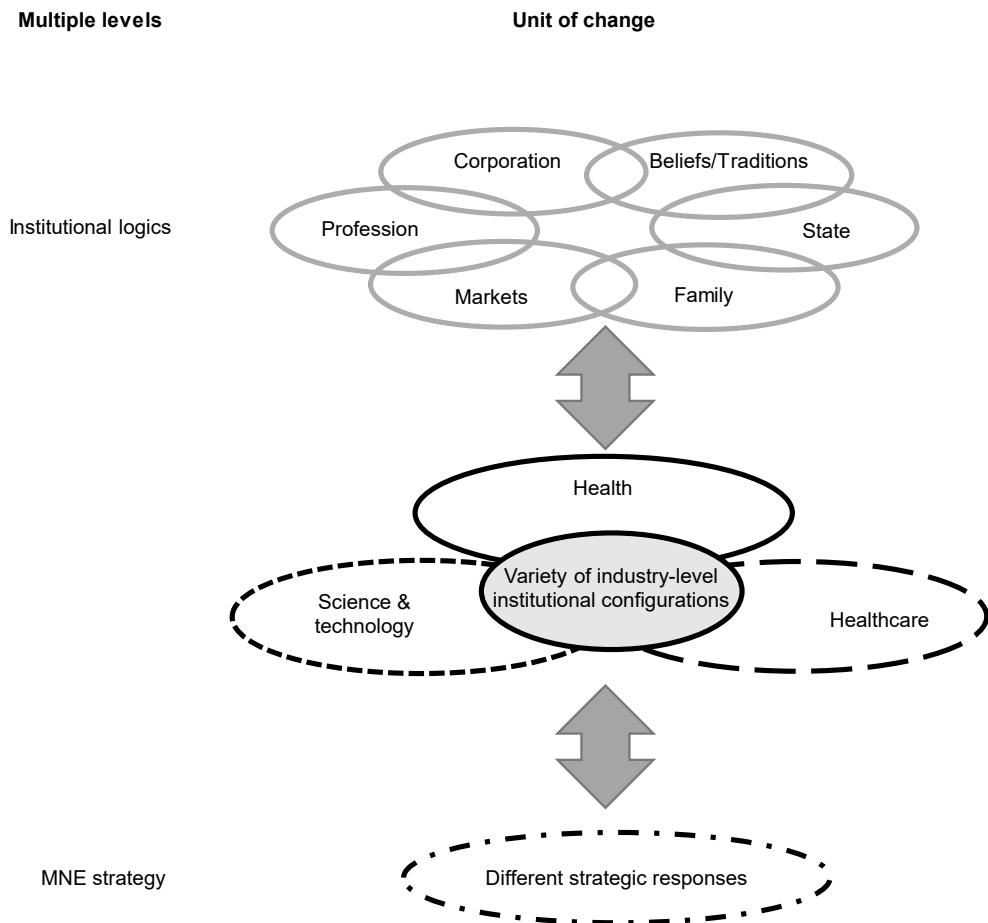**Figure 8.** Synthesis of the Research Results.

The results provide further understanding of the interactions between the different levels of co-evolutionary institutional change. It highlights not only that the causalities in these complex change dynamics are linear but also that understanding the non-linear causalities of change could provide further understanding of the interconnections of industry development.

# 5 Conclusions

## 5.1 Theoretical Contributions

Understanding the embeddedness of MNE and its interactions with its environment are core research themes in IB studies. The complex and volatile global business environment challenges MNEs in multiple ways (Hitt, 2016; Mudambi & Swift, 2011). Earlier research has focused on the mechanisms of co-evolution at the organizational level for example by focusing on MNE's role in interactions with its environment (García-Cabrera & Durán-Herrera, 2016). This interaction can involve activities in which the MNE engages to affect institutional change at the supranational level (Cantwell et al., 2010; Geels, 2014; Malerba et al., 2008). Thus, change is generally considered to stem from interruptions and strong interventions by actors (Child et al., 2012; García-Cabrera & Durán-Herrera, 2016). However, change in the prevailing institutional system requires changes on the regulative, normative, and cultural-cognitive levels (García-Cabrera & Durán-Herrera, 2016; Thornton et al., 2012; Scott, 2013). Therefore, it is necessary to extend our understanding of co-evolutionary institutional change from the responses of individual MNEs to mechanisms of change at different levels (Hitt, 2016; Jackson & Deeg, 2019; Johns, 2006; Meyer, 2007; Michailova, 2011). This study contributes to the literature on institutional change and MNE interactions by exploring the dynamics of the co-evolution of industry-level institutional changes. Table 5 summarises the theoretical contributions of the study.

**Table 5.** Theoretical Contributions of The Study.

| | Earlier literature | Insights from our study |
|---|---|---|
| **Institutional change** | Institutional change has been mostly viewed as a transition from one institutional logics to another, and the focus has been on organisational-level mechanisms of change (e.g. Hacker & Binz, 2021) | This study focused on industry-level change mechanisms and furthers our understanding of the interaction between societal institutional orders and industry-level institutional logics |
| **Institutional complexity** | Institutional complexity has been discussed as a source of competing pressures for organisations, and it has been debated whether institutional complexity can exist for longer periods (e.g. Newenham-Kahindi & Stevens, 2018) | This study built on the perspective that institutional complexity exists for longer periods of time. Institutional complexity changes over time and is a mechanism of industry-level institutional change |
| **Co-evolutionary institutional change** | Earlier research on co-evolutionary institutional change has identified mechanisms at the organisational level (e.g. García-Cabrera & Durán-Herrera, 2016) | This study introduces institutional complexity as an industry-level co-evolutionary mechanism, extending our understanding of co-evolution at the collective level |

First, by studying the firm strategy development and industry-level institutional complexity evolution over time, this research identified the changes in institutional complexity as critical in industry-level institutional changes. Institutional complexity refers to conflicting institutional logics, jurisdictional overlap, or unsettled prioritisation (Raynard, 2016). Thus, uncertainty arises from changes in institutional complexity and not necessarily from increased complexity. The institutional pressures on companies stem from institutional complexity, which requires companies to develop their strategies and organisational structures. Through these responses, a new form of stability can be achieved that supports actors in the renewed industry context. Through institutional complexity changes, companies influence the prevailing institutional logics, which is the environmental selection.

Second, by exploring the variety of institutional environments at the national industry level, the research findings highlight that multiple configurations can lead to the same outcome. This supports the view that in complex institutional systems, individual institutional elements are rarely sufficient to bring the desired outcomes (Pajunen, 2008). These different paths to the same outcome can consist of very different institutional logics configurations. Therefore, the pressures within these different national-level industries provide different opportunities and demand different strategic responses. Therefore, these pressures are more evident for networked and multiple embedded MNEs. The pressures, as they uniquely influence MNEs also create opportunities not necessarily visible to domestic companies.

Third, by studying industry-level institutional change at the intersection of different institutional fields, this study highlights the interconnectedness of institutional change. Here, the central element identified is the pace of co-evolution change (Raynard, 2016). It is critical for the interacting institutional fields to find synchrony in this change. This means that changes in one institutional field support the changes in another field, and the pace of change is similar enough for synergy to emerge. Thus, although heterogeneity is a criterion for co-evolutionary change, similarity is also necessary to find shared opportunities.

Fourth, from the three articles, this study contributes to the understanding of institutional change as a co-evolutionary interplay between institutional complexity and MNEs by exploring and providing insights into how institutional logics as selection mechanisms change and interact at multiple levels. This study advances the understanding of the co-evolutionary cycle between macro-level selection and micro-level adaptation by including the meso-level mechanism of institutional complexity. Thus, the study built on the understanding of the co-evolutionary nature of institutional change. It connects the organizational-level responses and experienced pressures to the organisational field-level adaptation and selection. It strengthens the assumption that change in the institutional environment is not a straightforward process but is strongly context- and time-sensitive, taking place at multiple levels. Change in institutional logics emerges from changing complexity that stems from the changes at the MNE and industry levels. These changes pressure societal-level institutional orders, changing the selection forces of the co-evolutionary cycle.

## 5.2     Methodological Contributions

This study adopted a multimethod research approach and applied historical, configurational, and futures studies research methods. This approach enabled the researcher to explore complex multi-level phenomena from different perspectives. Thus, the study offers an example of a rich contextual analysis that provides a thick view of the institutional environment.

By utilising the historical research method, business history can offer fresh perspectives on institutional change and respond to the demand for more historical research in IB studies (Buckley, 2016; Jones & Khanna, 2006). The strength of historical research lies in its capacity to delve into the nuances of time and place while refraining from making assumptions based on present-day interpretations of events (Suddaby et al., 2014). Business historical research has the potential to shed light on the discrepancies in research findings that may arise from contextual factors such as time and location. An example of this is the focus on national-level differences in the IB literature, as outlined by Teagarden, Von Glinow, and Mellahi

in 2018. However, this approach may not provide sufficient explanations for MNEs' the strategic challenges of MNEs, and it is crucial to consider other levels such as the industry-level and historical development. By understanding the past, we can gain a better understanding of current practices and challenges.

The configurational methodology applied a fuzzy-set qualitative comparative analysis (fsQCA), which provides an alternative for causal linear analysis (Fiss, 2011; Ragin, 2008). The methodology has also slowly gained ground in IB studies (Fainshmidt et al., 2020; Wagemann et al., 2016). This study applied fsQCA to examine institutional complexity through the variation of institutional logics configuration at the national industry level. Thus, the study provides an alternative approach to exploring institutional complexity.

The futures research methodology deepens the analysis of time by providing an analytical tool to explore futures visions and their interconnections to prevailing institutional logics. This methodological approach advances the ability of institutional analysis to provide forward-looking findings and enhances its possibilities to provide meaningful implications for managers and policymakers.

## 5.3     Implications for Managers and Policymakers

The study provides implications for managers and policymakers stemming from the three themes explored: the pharmaceutical industry, institutional complexity, and co-evolutionary institutional changes. Table 6 summarises the managerial and policy implications.

**Table 6.** Summary of Managerial and Policy Implications.

| Topic | Findings / Assumptions | Implication |
|---|---|---|
| **Pharmaceutical industry related** | Inclusion of health and healthcare into the analysis of industry development | To identify further business opportunities and anticipate changes management and policymakers must have a broader perspective to analyse business environment changes |
| | Futures paths for the pharmaceutical industry | The identified three futures paths for pharmaceutical industry development give managers and policymaker information to support decision-making |
| **Institutional complexity** | Variety of institutional logics and multiple routes to the same outcome | When renewing company strategies or state regulations, it is necessary to have a thorough understanding of the context and avoid 'silver bullet', solutions as they rarely provide the desired outcomes |
| | Differing institutional pressures among companies | From the perspective of managers, it is crucial to evaluate the influences of changing institutional pressures and for policymakers to understand that these pressures do not evenly influence the companies or industries. |
| **Co-evolutionary institutional change** | Interconnectivity of change and ability and limitations to influence change | Both managers and policymakers have the potential ability to influence change. However, actions do not necessary create change. Therefore, it is necessary to understand the contextual conditions that might support the development towards the desired outcomes |
| | The pace of the development trajectories influences the probabilities for co-evolutionary change | Managers and policymakers should generate systematic practices to monitor the wider business environment to identify the potential changes in the pace of changes in the relevant change trajectories |

The study takes a broader perspective, recognising the pharmaceutical industry's development not only as a product of scientific and technological advancements but also as an integral part of the growth of healthcare and welfare states. While earlier research (e.g. Malerba & Orsenigo, 2015) has explored the industry's development in a wider context, most studies have focused on technology and science-related topics. By delving deeper into the connections between various components and examining potential changes at the intersection of these fields, managers can gain valuable insights into developing effective company strategies. This study provides three futures paths for pharmaceutical industry development: (1) expansion of innovations, (2) personalisation of demand, and (3) intensified collaboration. These three paths provide managers and policymakers with alternative perspectives on the expected changes to support their decision-making. These different paths can open up new opportunities and perhaps broaden the viewpoint for pharmaceutical industry companies to develop their businesses. The changes in how health is perceived in

Western societies as an individual asset and as something that must be proactively maintained create enormous pressures to change the prevailing healthcare systems and open up new opportunities for firms. This will require pharmaceutical companies to create new types of co-operations. At the more global level, health will be increasingly viewed as a global good that also relates strongly to the consequences of climate change. These pressures will also offer new possibilities for pharmaceutical companies to apply their know-how in areas of food and water supply or safety and improvement of air quality in large cities.

To effectively renew company strategies or state regulations, it is important to have a comprehensive understanding of the context and avoid quick-fix solutions, as they rarely produce the desired results. Therefore, collaboration and organisational practices that enable boundary-spanning interactions between the pharmaceutical industry, healthcare providers, regulators, and technological and research institutes should be fostered. Managers must carefully assess the impact of changing institutional pressures, while policymakers should recognise that these pressures affect companies and industries differently. This makes the anticipation of changes in regulations difficult; therefore, the processes for regulation development should be inclusive both in terms of different nations and between different actors from businesses and policy to actors representing patients and industries. Pharmaceutical companies have the know-how and organisational experience in working with high levels of regulations in different regions and national contexts. This expertise will provide them with possibilities to cope with the increasing regulation from sustainability developments and challenging international relations. There is an increasing need for dialogues between different spheres of industry, society, and policy developments.

Both managers and policymakers have the potential to influence change, but their actions alone may not necessarily produce the desired outcomes. To promote the development of desired outcomes, it is important to understand the contextual conditions that support change. This would be supported by the practices crossing the interfaces of the pharmaceutical industry, healthcare, and health actors. Therefore, managers and policymakers should implement systematic practices to monitor the broader business environment and identify potential changes in relevant change trajectories. These managerial and policy implications are highlighted by the current pressures from the increasing uncertainty experienced throughout multiple industries and geographical locations. This relates to the wider discussion of the means to increase the resilience of internationally operating companies (Bozonelos & Tsagdis, 2023).

## 5.4 Future Research and Limitations of the Study

Future research ideas emerging from the results of this study are three-fold. Firstly, there is a further need to understand the ability and means of how MNEs and policymakers could jointly influence institutional changes and identify emerging opportunities or even create them. Secondly, future studies could apply the created framework to explore other industry contexts to identify ongoing institutional change trajectories and newly emerging institutional structures. The third avenue for future research stems from the identified futures trajectories for the pharmaceutical industry. It is necessary to further understand how responsibility is shared in autonomous and de-centralised systems. These three broad topics offer fruitful future research opportunities at multiple levels: organization, industry, and regional.

Although this study provided a deeper understanding of the co-evolutionary institutional change, this study has limitations due to its temporal and contextual aspects that therefore set boundaries for its contributions (Whetten, 1989). However, these limitations provide research opportunities for future studies to enhance our understanding of co-evolutionary institutional change.

Related to the contextual boundaries of this study, the focus in this study was on changes in the pharmaceutical industry as the focal unit of change. The pharmaceutical industry has high levels of regulations and permits and high entry costs and requires high technology and scientific know-how. Therefore, it provided an interesting context for this study but limited the transferability of the results to other industries. The high levels of regulation and permits make the institutional environment visible and unique to the industry. Thus, further studies can explore other globally networked industries to increase the understanding of the different representations of the identified mechanisms. Another contextual aspect relates to the focus on Europe, which represents the Western welfare system and developed economies. This might narrow down the institutional elements that emerged from the analysis and thus should not be considered that other relatively different systems would function with the same mechanisms identified here. This contextual challenge has been identified in earlier institutional literature, as most studies on institutions have investigated Western economies. Therefore, the institutional logics that was the basis for the analysis conducted in this study could be and most likely needs to be characterised differently in another industry or geographical context.

Relating to temporal aspects, the data for this study were collected before the COVID-19 outbreak. This might have influenced the analyses of articles II and III. The COVID-19 pandemic had a profound impact on the economies, the understanding of health, and the market fragilities of the pharmaceutical industry. The pandemic and its consequences generated public discussions of the consolidation of pharmaceutical ingredient production, national priorities of supply, and the need to create global-level regulations and operational guidelines. These

factors might influence the variety of the institutional complexity of the industry and should be explored in future research.

The chosen research approach sets some limitations. This study primarily utilised official documents such as annual reports from companies, industry associations, and government agencies, and historical books commissioned by industry associations or companies. However, future studies could examine the unofficial narrative of the institutional changes in the pharmaceutical industry by incorporating more informal materials such as personal memoirs, diaries, and internal documents from companies, associations, and government agencies. In addition, this study only looked at modern medicine, but future studies could expand the scope to include the co-evolution and emergence of the pharmaceutical industry to extend the historical enquiry, which would enhance our comprehension of changes in societal-level institutions. Future studies could also integrate more company-level data into the fsQCA analysis to provide, in addition to the document and statistical materials, the perspective of managers and industry experts into the analysis. This would improve the accurate reflection of the phenomenon. Similarly, future studies focused on the expectations of the pharmaceutical industry futures could include methodologies that engage industry actors in the analysis.

The prevailing turbulent world emerges from long-term developments such as the global trends of digitalisation and AI developments, and sustainability actions as well as the more sudden disruptions of COVID-19 crisis, and the Russia-Ukraine war. These events have created momentum for change, as these changes shake and, in some instances, grumble the prevailing institutions from formal to informal structures and strategies. Increasing our understanding and broadening perspectives of the possible development trajectories and mechanisms of these wide scale changes through research will contribute to the development of our societies.

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