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	Anders Kaare Nielsen	20133208
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Supervisor (project/thesis):	Yimei Hu

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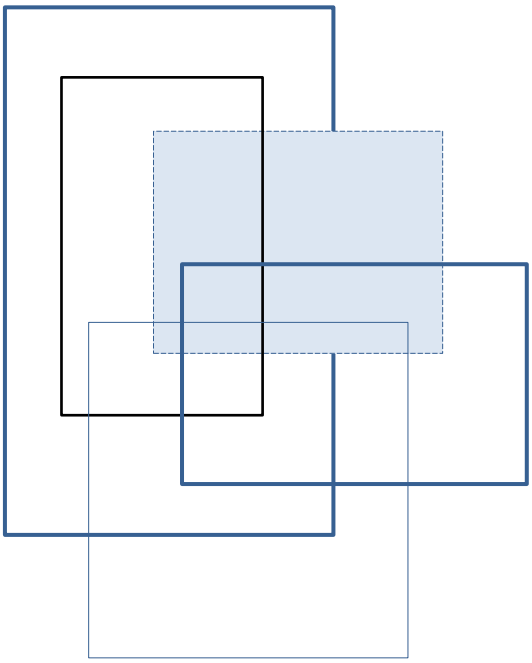
A Knowledge-based Economy - Development of innovation and knowledge creation in networks from the perspectives of innovation and institutions



Researchers
Anders Kaare

Nielsen

Supervisor
Yimei Hu

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Summery

This thesis approach recent year's trends, phenomenons and academic literature in the pursuit of understanding the global economy and its movement into a more knowledge based economy. Therefore this thesis advocates that institutions must as well understand their positions and the influence they have and consider the options of institutional regulation or accommodating incentives. The same considerations should vice versa be implemented by the industry that some issues could apply to one institutional context, where it would be contradictive and inapplicable in other institutional contexts and focal mind-sets. The thesis therefore investigates the academic area in the intersection between innovation and institutional theory and the changes on different levels within the fields. This thesis therefore investigates how such networks could be developed and which institutions should be a key part of the networks and how the institutions should interplay with each other depending on the contextual settings. This is done by a theoretical discussion, which aims to discuss the relevant academic literature and identify and include key trending phenomenons to undercover the gaps within the field. The thesis is executed and approach by the system view. The thesis undercovers phenomenons such as Scalable learning and knowledge creation, which leads to the development of the framework "*Networks of Scalable Knowledge Creation*" within the Triple Helix model of innovation, which assists scholars as well as practitioners in the understanding and executing the hybridized networks within. These insights, developments and frameworks are furthermore applied in the case of Carlsberg, which aims to apply a network of innovation for Carlsberg in China. In this Case Study it is discovered that the role of government and the institutional support for knowledge creation and innovation is critical for MNCs in emerging markets. The thesis furthermore suggests a 3-level holistic strategy for Carlsberg, which advise Carlsberg to apply reverse innovation in their pursuit for innovation and reinventing their stagnant home market. Finally the thesis propose a variety of propositions for future research in the pursuit to gain more view from both the business and political science area, to get a more multi-sided understand of institutions, institutional innovation and technological innovation.

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Introduction

In recent years uncertainty has risen and the global economy is on the verge of a new era with rapid technological developments, which these conditions on the one hand pose both threats and challenges, but also could provide opportunities for the businesses.

Today's society and global economy is rapidly and exponentially moving from an industrial society with focus on the product and the marked to a more knowledge based society with focus on knowledge and services. Previously, the industry tried to simulate the physically human processes, where in recent years the processes simulated are more intangible. This is also seen in the past decades business practice, which is focussed on closed and expansive organization, which mere purpose was to scale to gain a profit, where today's business mind-set also is focussed on a more open and explorative business practice.

As industrial revolutions has changed societies from a primary sector to a secondary sector and later tertiary sector, from farmer to producer of products, and yet again, from producer of products to producer of services. In recent years we are seeing an evolution into the quaternary sector, where it is not the production of services, but the production of information services that are the center of the sector.

This is a trend from a more static and closed economic system has changed to a more versatile and open economic system, where synergies between institutional actors and the creation of knowledge is in focus. This challenges the institutions and organization to open up to the innovative information flows and integrate these into their activities and global operations. However this mind-set is not universally applicable and complexity of each entities particular context should also be taken into account in the pursuit of establishing a legitimate position for local institutions.

The economic system change should also include the domestic institutions of countries, institutions of emergent markets in particular, which in some cases would be key actors in the construction of the economic system and how this new sector will be approached, adapted and later executed.

These areas will key in the handling and safegarden of new technologies in society, where institutional key actors could influence the outcome of this new area. New technologies as Artificial Intelligence and machine learning as mere examples are in recent years challenging the other lower tier sectors with obsolescence that could critical impacts on local environments if executed wrongly by both institutional actors or industrial actors. Therefore institutions must as well understand their positions and the influence they have and consider the options of institutional regulation or accommodating incentives. The same considerations should virse versa be implemented by the

industry that some issues for e.g. AI could apply to one institutional context, where it would be contradictive and inapplicable in other institutional contexts and focal mind-sets.

The issue this thesis will focus on is in the intersection of innovation and institutional theory and the changes on different levels within the fields. It will furthermore focus on how a company can manage its activities from the perspectives of the two academic areas in trying to understand what it is that have a critical impact today to survive in a new era that is on the rise in the global economy. An era most focussed on technological development and thereby knowledge as a key part of the global economy. Knowledge and the knowledge creation that could be captured by systems and networks in a holistic understand of value creation. This thesis will therefore investigate how such networks could be developed and which institutions should be a key part of the networks and how the institutions should interplay with each other depending on the contextual settings. Therefore will an investigation on how an MNC could improve innovation and knowledge creation in networks also be an interesting and important perspective of how innovation can be created in networks.

Problem Area

Many multinational corporations (MNC) have in recent years been challenged by a swift in paradigm, some refer to this as the swift in the global economy *(Dicken 2001)* and this swift has set an academic focus on e.g. innovation from an internally perspective for the multinational corporation, however this swift in paradigm is in recent years evolved beyond the level of an entity to the more general construct of institutional theory. Where traditionally businesses, particularly multinational corporations often utilize their global presents to expand and conquer to gain presence, other doors have been open to gain presence, with support from an institutional perspective.

This Thesis argues that there are a swift to a more knowledge focussed economy in recent years due to phenomenon's in the academic area of institutional innovation, which this thesis simultaneously argues could be integrated with matured theories in the field of innovation.

Main Question:

How can MNCs better innovate in developing countries from an innovation and institutional perspective?

Sub-questions:

1. **How can MNCs better innovate in developing countries? And which theories could explain this from an innovation and institutional perspective?**
2. **How can a MNC improve their focal R&D within the perspectives of innovation and institutions?**
3. **How could Carlsberg develop a network of innovation within the institutional support of China?**

Reflection upon the research questions

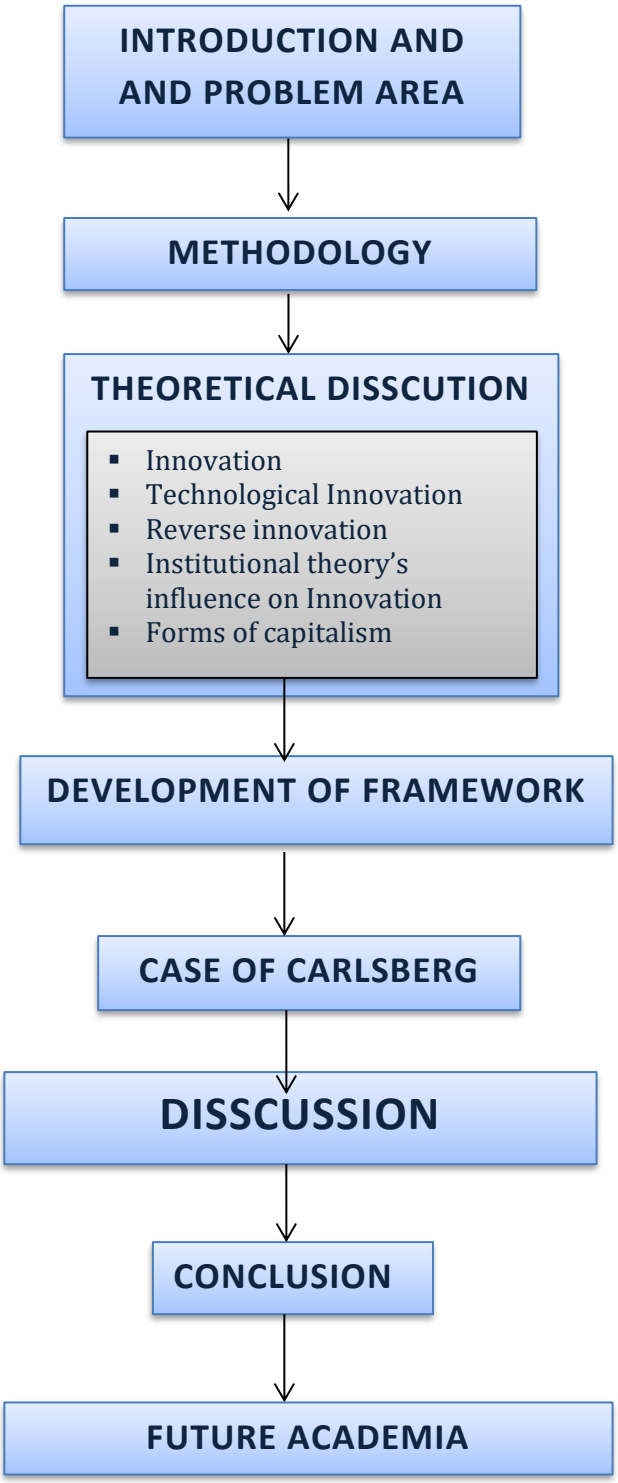
Due to global uncertainty, political instability and rising development in technology and knowledge in the economy, is it more than ever important for a business to navigate its activities. Therefore this thesis wants to investigate the current issues in managing international business from an innovation and institutional perspective.

Firstly, will relevant theories be uncovered and discussed to investigate the academic area of innovation and investigate the interplay between the academic area of innovation and institutional theory, thereby investigate gaps and phenomenons in the academic area. Secondly, will some of the phenomenons be discussed in relation to the matured theories to uncover which consequences this have and how it influences the academic area of innovation and institutional theory, to further develop a framework that include and cover some of the discovered phenomenons. Additionally, will the case of Carlsberg be presented to undercover which Challenges a MNC faces in an innovation and institutional perspective to furthermore identify how the developed framework could be applied in the context of Carlsberg. Lastly, the framework and the case of Carlsberg will be discussed to investigate how Carlsberg can utilize focal institutions and create a network of innovation. These questions and investigation will help answer how MNCs better can innovate within the area of innovation and institutions and which challenges that have an urgent and critical impact on the business today.

Readers guide

To provide a clear understanding of the Thesis structure an illustration have been created to visualize the flow of different chapters. Therefore, it is expected that the navigational process of the reader can be facilitated. First of all, the Introduction chapter the background of topic selection is explained along with the main research area and research questions. Afterwards a mythological reflection lays the underlying assumptions and foundation for the following chapters, discussion and theories applied in the thesis. The following chapter is called a discussion of theories and phenomenon on already existing theories can be found with a focus on knowledge creation and networks. Afterwards, a framework is developed between new phenomenons in the boundaries of the existing theoretical foundation. The following chapter will introduce the case of Carlsberg, which will start with key issues for Carlsberg to identify their position and context. Afterwards, this will lead to the discussing of Carlsberg in a pursuit of innovation in China. Finally, in the conclusion the main research question is addressed with the final highlights throughout the project, and Carlsberg's 3-level holistic strategy is advised. And lastly a set of proposition is proposed for further research for co-scholars.

Project design



Methodological reflections

In this chapter the methodology of the paper will be presented, which will lay out the conditions for the use of the theories of the paper. Furthermore the chapter will contain reflections about the methodological choices and how these influence the use of theories in the paper. Finally the methodological reflections will present an understanding of the theoretic areas and how these will be executed.

Qualitative and Quantitative Data

The Thesis will use both quantitative and qualitative date to triangulate the findings of investigation as best possible. The Thesis relies mostly on qualitative data e.g. quotes from academic articles and reports, quotes from key individuals in the case study and secondary qualitative data. The quantitative data is from the annual reports and the key financial data and market conditions.

Critique of sources system view

It is critical for this paper that it uses relevant sources; however it is a goal of this paper to present established sources particularly in relation to the theoretical sources. Some critical sources will be from think tanks with the ideal intention to bring new insights, these insights are evaluated to be suited for this papers theoretical area and the authors are academics with activities in academia as well. These sources will be triangulated with other sources both in academia and later practical sources. The sources of the paper are applied with account for particular biases.

System View

The system view will now be presented and reflected upon in relation to this thesis and how it affects the thesis root assumptions.

The System view contains in general 3 overlapping philosophies to understand the paradamic thinking, which is Systems theory, Holism, Structuralism. (Bjarke 2011 p. 102)
The view is known as an interdisciplinary and multiperspectival domain, which will help understand and connect the two theoretical areas in the thesis.(Bjarke 2011 p. 102)
The main difference in the system view from other views is the focus on the holistic interplay in the system rather than the smaller fundamental parts of the system.
The system view also operates with structuralism, especially in economic and social science, where it often refers to structures and structural networks.(Bjarke 2011 p. 103)

This will be relevant in the understanding of the thesis main theories and the understanding of developing and applying the frameworks to the case study. Also the view can make the use of both objectivism and subjectivism depending on the context due to its interdisciplinary and holism. In some instances could subjective arguments be objective.
As said the system view works with networks and they also work with open and closed systems, which also could be referred to as networks (Bjarke 2011 p. 116). This is also seen in theoretical academic area of innovation like open innovation and open innovation in networks. A key point in the system view is also the interaction between these networks and the use of feedback, rather than one way communication.

Social construction in systems

The Systems theory and the System view could be influenced by the logic of social construction. One could argue that the network paradigm has some similarities to the system theory by the logic that we as certain actors or entities can subscribe on a certain system or network, which we assume is based on certain virtues and common norms, we also acknowledge that there are other networks with the same construct. Therefore we could also acknowledge there are different types of logics in different types of networks e.g. there could be more than one objectivity, also referred to as different intersubjectivities in the social construct view. Some networks could have the same or partly the same intersubjectivity and be interconnect in a greater network, or as in the system theory, two subsystems that is part of a greater system or being two systems part of a super system. (Bjarke 2011 p. 118)

Generalizability of case study

Some of the issues that might occur in the generalizability of case studies and the development or redevelopment of frameworks on the behave of case studies should be seen in the context of the case studies. Due to the view and root assumption of this paper, is a case study chosen as methodological praxis, since it assist in setting the boundaries of the theories applied. When investigating the global economy many dynamics come into play and scholars also advocate for a more transparent abstraction of available date:

"Finally, we must be clear about the level of theoretical abstraction to which we are prepared to go on the basis of available data on processes of change in the global economy."(dicken 2001)

Especially when we investigate a case study with different national context it is important to aware of ethnocentric biases:

"In particular, we must ask ourselves how generalizable are the theories we develop based on particular times and places. In other words we must be aware of the pitfalls (and ethnocentric biases) that are inherent in taking data from specific contexts and trying to theorize about the global economy as a whole." (dicken 2001)

Which means that some of the findings or challenges in global economy might not be exactly the same in other contexts. This thesis will therefore aim to take into account the limits of the findings in the case studies and advocate for disclaimers of the generalizability of the theories used and the assumptions developed through this thesis.

"Furthermore, we must be equally cautious about extrapolating the metaphors and motifs of particular theoretical frameworks and inferring a broader epistemology for understanding the global economy. That said, we must be careful not to preclude the option to discuss the global economy, and power relations within it, as a structural whole." (dicken 2001) "

These root assumption advocates of the choice of a case study and the contextualization of theories, when applied, however not to exclude the opportunities to debate and investigate the global economy on behave of contexts and in its holisity.

Theoretical discussion from an institutional and innovation perspective

In this chapter different theoretical aspects of the thesis will be presented, discussed and distinguished. Different forms of innovation theory will be introduced. Furthermore different institutional theory will be introduced to contribute to the academic area and as a support to the innovation theory. This will furthermore be chronologically important for the next chapter of methodology that will explained the use of the theory in this paper and justify the use and synergies of the two academic areas and the particular theories that interplays.

Innovation

Recent years businesses navigate throughout the global scene on a variety of areas and the international pressure from institutions, other actors and the rise of technology have not simplified the international landscape for a business. The latter of the three, technology in form of innovation have been very important in recent years. Where past issues for companies have a tendency to focus on neoclassic advantages and price has the recent global landscape a focus on one truly sustainable advantage, which is out-innovating other actors (Moore 1993).

This state of mind has a focus on value creation through technology advancements and one could argue a more output focussed innovation. This classic type of innovation is known as *technological-innovation*. Another important area is also the rise of different institutional innovations, which have an impact on the current international landscape and the general use of innovation. The term of institutional innovation have different definitions depending on the perception of the term e.g some also refers to institutional innovation as institutional change, which could be defined as:

> *"Our focus is on the process of institutional change, rather than institutional theory per se. We define institutional change as a difference in form, quality, or state over time in an institution. Change in an institutional arrangement can be determined by observing the arrangement at two or more points in time on a set of dimensions (e.g., frames, norms, or rules) and then calculating the differences over time in these dimensions." (Van De Ven 2006)*

This definition focuses on a broader level of the term of institutions (macro), however the true innovation may also emerge from a lower entity-level (micro). Other scholar's advocates for institutional innovation have a more innovation and organisation focussed definition of the term:

"Institutional innovation allows organizations to re-architect themselves to scale learning and generate richer innovations at other levels, including products, business models, and management systems (Brown, 2013)

The typology of the current swift in institutional innovation is in this typology explained by Scaling – going from scalable efficiency to scalable learning .

***"Scaling learning**—As companies begin to leverage scalable transactions and relationships, they realize that the longer-term opportunity is to evolve institutional designs that explicitly seek to accelerate and amplify learning among a growing number of participants—we call these "creation spaces."* (Brown, 2013)

The former construct was based on Transactional cost and how to gain scalability or synergies by obtaining scalable efficiency.

"Ronald Coase described this rationale—creating efficiencies by decreasing transaction costs—in his 1937 Nobel Prize–winning paper on the nature of the firm. Most companies—indeed, most institutions—today are the product of the pursuit of scalable efficiency: self-contained entities that perform all critical economic activities within their own four walls."(Brown, 2013)

The new century's focus on learning demands a new type of synergy to be obtained in the institution. The focus on learning is also the focus of knowledge and especially tacit knowledge is an important part of scalable learning:

"They also make it very challenging to access tacit knowledge—the knowledge about work that resides in every employee's head. We generally find this knowledge difficult to express, even to ourselves, and much less to others. We are likely to stumble and fumble in trying to articulate it, and, as a result, we are not likely to make the effort unless we have trust-based relationships with others. The problem is this knowledge is often the most valuable, especially in times of rapid change, because it is often the newest knowledge, gained through recent experiences that we have not yet had time to process or integrate with other knowledge" (Brown, 2013)

As companies tend to execute down-steam horizontal integration to obtain bargaining power over its ecosystems sub-suppliers, it also limits its ability to tap into a broader field of knowledge:

"Of course, there is a price to be paid. By shrinking the number of participants in business ecosystems, companies can compromise their ability to tap into a broader and more diversified

range of deep specialization. It is hard to be serious about scalable learning if a company is scaling back, rather than scaling up, the opportunity to interact with expertise outside the firm."(Brown, 2013)

Not only the control of the ecosystem is critical for the knowledge construct of the company, but also the relationship or lack of relationship can be critical to the tacit knowledge obtained in the ecosystem interactions.

Scalable learning could be very interesting in the management of knowledge on a company or micro level, however it would also be interesting to link this to other frameworks on a industry and macro level that manage knowledge or in other words science. One grand framework that capture the management of knowledge and science is the Triple Helix model of innovation, which is a model of a network that connects interaction between academia, industry and government. (Etzkowitz 2000) This could be interesting in terms of the management of knowledge, in particular the tacit knowledge which is highlighted as the valuable knowledge that is hard to manage. The main point is that knowledge has an enhanced role in the economy and the society.

Another key point in relation to Browns thoughts of tacit knowledge and the conditions this knowledge needs to be manage within is also some of the root assumptions of the Triple Helix model. In relation to the future legitimation of science Etzkowitz also touch upon the value of having science hubs under control and the effect of its local presence:

"*The relationship between the site where knowledge is produced and its eventual utilization was not seen to be tightly linked, even as a first mover advantage. This view has changed dramatically in recent years, as has the notion that high-tech conurbations, like Route 128 and Silicon Valley, are unique instances that cannot be replicated*"

(Etzkowitz 2000)

This also fits in the understanding of knowledge standardization and the loss of knowledge in doing so. With the this mindset that knowledge is not just produced and have an effect on its local environment and in interaction with the receivers of the knowledge, also advocates for institutional innovation that focus on this type of knowledge generation. Countries also acknowledge this today and manage their government funds more decentralized now, so it do not create geographical polarization of knowledge. (Etzkowitz 2000)

Technological Innovation and the support of institutional innovation

Technological innovation is the more classic innovation that we know as advancement in technology. A common typology in this academic area is often to distinguish between incremental innovation and radical innovation, hence minor value creations and major value creations (March 1991). Another typology that relates more to the actions of an entity is the Exploitative Innovation and Explorative Innovation. These terms are often related to the previous typology, however the exploitative Innovation is when a company focus on exploiting their current technology, to maximize the value they can achieve and can capture in the business part of the value. Explorative Innovation focuses not in the improvement of innovation, but in the newness of innovation (March 1991). Often there is a connection between incremental and exploitative innovation and vice versa explorative and radical innovation. The logic is that often exploitative innovation would lead to minor incremental and continuative innovations. The company pursue stabile innovations, where in the explorative, where companies take risks and focussed its innovation and allocate part of its investment to taking these risk by searching among uncertain alternatives (March 1991). The logic is that these areas are very likely to produce radical innovations, due to their newness. However the logical and connection of the two typologies should very likely be challenged in the particular context, where the exploitation of innovation also could produce relative radical innovation and value creations. More likely is it even that explorative innovation produces incremental also as by-products of a given radical innovation.

The main point is that in the academic area of technological innovation, are these typologies diffused typologies, however these topologies should not be confused with each other nether substitute each other.

To dig deeper into how this could be relevant to organization and institutions, we could refer back to institutional innovation and how this could affect technological innovation from a theoretical point of view. In the typology of rather or not to be exploitative or explorative, was it stated that this has a connection to the decisions of the firm. A firm can have exploitative or explorative innovative initiatives; however a firm or an institution can support either exploitative or explorative innovation. Especially MNC's would have a tendency, due to their size and multinational presence, to distinguish their operations and activity to be either explorative or exploitative in terms of innovations. One could argue that a given MNC would place their exploitative innovation activities in places with stability and where the MNC also have a high amount of activities so that they would

have a certain degree of economies of scale, to control this stabile construct of incremental innovations. This could also be countries which institutions supported this type of stabile innovation e.g. by standardized education or some more secondary like transparency in wages and low risk in financial regulations.(March 1991).
On the other hand the MNC would place its more explorative operations in a diverse fashion even in plural countries to diversify the risk. Also this could be in countries with institutions, which would support risk taken and other characteristics depend on the context, like diverse education, creativity and maybe even provide governmental funds to given projects. This would be from a more institutional theoretic perspective, which will be elaborated later in the discussion.

This would be one way to utilize synergies of the strategic geographical placement of activities. Another way to utilize the synergies of strategic placed activities is the theory of reverse innovation, which also could be interesting in relation to institutional innovation influence on technological innovation. By the logic of reverse innovation plays institutional innovation a big part, where reverse innovation advocates for developing innovative activities in the third world countries or foreign markets, which is below the development of the company's host country. The idea of constructing a reverse of this innovation strategy is due to recent years practice of arbitrage of focal companies and thereby lack of innovation in these exploited countries, where the innovation activities would be conducted in the host country. This practice has, as said, been challenged, also due to pressure from focal institutions, because of its contribution to the more complex phenomenons of global polarization. The main point of this theory, if it succeeds is also to bring some of the innovation generated in the focal countries back to the host country and perhaps reinvent the home market. This would be a more holistic use of the arbitrage practice and also a practice with a social dimension, which as said also could gain legitimacy for the local institutions.

Reverse Innovation

In the before mentioned types of technological innovation is there also a more globalised way of thinking of innovation. This type of innovation focussed on bringing innovation from one part of the world to another part of the world, normally from one market to another market. Normally MNC bring their innovation to the markets that they enter, especially emergent markets, like a type of imperialist mindset. However in recent years this way of thought have been challenged with the type of reverse innovation. This could be due to particularism, where we see that the MNCs normally standardize the emergent market operations into their domestic processes also innovative activities. (Zedtwitz 2014)

Also the ideas markets, developed, emerging and advanced, as the only typology for reverse innovation have been challenged. So instead of focussing on the product introduction, other typologies as for where the idea od the product concept, ideation, is also important. Furthermore where the product development takes place and R&D units placement is also important and is about development of reverse innovation. (Zedtwitz 2014)

Also important is the activity of the innovation as seen in the model depending on the innovation activity, different typologies emerge across ideation, development and market introduction. If it is a prerequisite for a reverse innovation or if it is determinants of a reverse innovation.(Zedtwitz 2014)

Table 2. Three Types of Reversals in the Global Flow of Innovation and Associated Reverse Innovation

	Flow of Innovation: Ideation → Development → Market(s)		
Innovation Activity	Ideation	Development	Market Introduction
Prerequisite for a reverse innovation	Idea of product concept or technology originated in a developing country	Main locus of product development an R&D unit in a developing country	Product designed for and primarily targeting the market of a developing country
Determinants of a reverse innovation	Product subsequently developed, launched, or introduced in an advanced country	Product subsequently launched or introduced in an advanced country	Product subsequently introduced in an advanced country
Shorthand notation	DAxx or DxAx or DxxA	xDAx or xDxA	xxDA

Reverse innovation also have internal, but most certainly external conditions that affects the outcome of reverse innovation. The institutions, and how the institutional settings and policies interplay with the reverse innovation strategies, is critical upon success. However yet the logic in the literature has been established on how host- and focal-institutions might behave for reverse innovation initiatives. (Zedtwitz 2014) The focal institutions of traditional emergent countries would benefit and therefore advocate for reverse innovation in their countries, thereby welcome reverse innovation in the form of e.g. R&D-centers, which would be a good trade-off of classic arbitrage of cheap labour. However arguments of that the host countries would reject or refuse reverse innovation is not necessarily the opposite of the focal institutions, which the litterature claims it is:

> *"In the same vein, policies in the home country of MNCs focus on keeping jobs at home, and hence policies in those countries will likely discourage shifting innovation capability offshore and thus weaken a firm's ability for reverse innovation overall."*(Zedtwitz 2014)

The institutions of the home country might want to keep jobs, but reverse innovation does not necessary means sacrificing jobs, but more to gain necessary human capital. Take for instance Denmark as a country which does not have a high population and one could argue the nation would have a lack of diverse human capital or a shortage of some competencies, therefore would reverse innovation in some instances makes sense from the perspective of the institutions. In total is the main point that reverse innovation could be opportunistic for the MNC and both the domestic and focal institutions.

Institutional theory's influence on Innovation in an international perspective

Scotts 3 institutional pillars is a central part of the institutional academic area. The pillars, which focuses on the 3 dimensions of social science i.e. legal, normative and cognitive. The theory is framed in silos and is relatively static, nonetheless it is a grand theory with a certain holisicity, which could have a critical influence on the academic area of institutional innovation.

Table 1 Three conceptions of institutions

	Regulative	Normative	Cultural-cognitive
Basis of compliance	Expedience	Social obligation	Taken-for-grantedness, shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Common beliefs, shared logics of action
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable, culturally supported

Table 2 Institutional pillars and carriers

Carriers	Pillars		
	Regulative	Normative	Cultural-cognitive
Symbolic systems	Rules, laws	Values, expectations, standards	Categories, typifications, schema
Relational systems	Governance systems, power systems	Regimes, authority systems	Structural isomorphism, identities
Routines	Protocols, standard operating procedures	Jobs, roles, obedience to duty	Scripts
Artifacts	Objects complying with mandated specifications	Objects meeting conventions, standards	Objects possessing symbolic value

(Scott, 2001)

Scotts institutional pillars is a framework, which provides different dimensions to understand institution. The point of this is how could this influence Institutional innovation? For this we can see that some of the more static part of the framework as especially the Legal dimension, which focus more on a less fluent construct may stay in contrast to Institutional innovation, partly the normative pillar and especially the cognitive pillar could be critical in Institutional innovation and how Institutional innovation is influenced from an international perspective. This is because in international institutional innovation there will be a lot of normative and cognitive aspects in changing organizations and entities and in developing institutional innovation. Partly there will also be some legal aspects to overcome, depending on the particular context, especially if the institutional innovation contradicts any institutional laws in the context. Institutional innovation will more certainly challenge the organization normativity in the normative pillar in the pursuit of creating value in the perspective of institutional innovation. The cognitive pillar might be the driver of institutional innovation and by this these two institutional pillars might influence international institutional innovation. (Scott 2001)

A typology of Capitalism

In this reflection there will be presented typologies on how to structure capitalism, to further discuss capitalism and the government's role.

The "traditional varieties" of national capitalism focuses on two broad categorizations, the liberal market economy (LME) and the coordinated market economy (CME). However, there is another typology, which is a more unpacked and nuanced categorization: *Neo-liberal market capitalism, social market capitalism, developmental capitalism, Authoritarian capitalism.* (Dicken, 2015)

Neo-liberal market capitalism is the most liberal variant in this typology of capitalism, it is dominant in USA and UK. Capital markets are decentralized, open and fluid. Shareholder value is the dominant philosophy. The state has little influence on the economy strategically. Short-term business goals seems to predominate and individualism is thereby a dominant characteristic. (Dicken, 2015)

The different typologies of capitalism are not universally beneficial for every country. There are many practical dynamics that plays in and affect the capitalistic structure. For instance, East Asian countries (excluded China), like Japan, South Korea, Taiwan and Singapore execute the "developmental capitalism", where the government play a central role in setting of social and economic goals within an explicit industrial strategy. (Dicken, 2015) These countries are bound to certain industries that they prosper by. Thereby, the former coordination and collaboration between government and industry would be prosperous for countries or nations in this context.

So this contextual reality puts a theory of a best practice typology to a test. One other interesting observation in this typology is e.g. The Authoritarian capitalism, which is dominant in China and Russia; however seems to only be prosperous in China. Again this needs to be seen in relation to the historical context of the country, the geographical placement of the country and the characteristics of the country's economy – is it a diversified economy or simplified economy with few main industries. (Dicken, 2015)

Despite this categorization, it is also important to put this into perspective of the dynamics of different capitalism types in the world and the relations between them. So far the typology has been stated to some extent simplistic and the capitalism types should not be seen as static. (Dicken, 2015) Because these should not be seen as static it is therefore also important to view these typologies in relation to the current use of capitalism types by other countries and how these interact in a global scale and affect each other. Because different types of capitalism around the world affect each other through interactions; commerce, political issues, cultural exchange of mind sets ect.

Therefore I argue that these typologies of capitalism should be seen as influences to achieve certain contextual goals for a certain country, taken into account how the outside globalized world would affect the choice of the government politically and economically.

Theoretical foundation and the gaps in the academic area

This thesis theoretical foundation is based on some of the before mentioned, authors, typologies and frameworks. The thesis will operate in the interfield of innovation and institutional theory, thereby it will also focus on institutional innovation, however it will not substitute institutional innovation with innovation or institutional theory. Institutional innovation will be under the academic area of innovation and two academic areas of innovation and institutional theory will be used and investigated as two independent academic fields. The academic field of Innovation will be used to explain how institutional innovation could have an effect on current dominant frameworks and eventually support these or perhaps inspire to revise current frameworks or theories. The academic field of Institutional Theory, will mainly be used and investigated in terms of how it can support institutional innovation or in other ways interplay with the academic field of innovation.
This thesis will furthermore investigate the current compulsory issues in the mentioned academic fields. In institutional innovation there are indications that there are gaps in terms of both of understanding this area and in terms developing it in cohering with the practical phenomenons in current time, but also phenomenons on the edge of tomorrow. Previously, in the theoretical discussion, it was discovered that the phenomenon of scalable learning was very close to be adapted in its diffusion, which could be an interesting compulsory phenomenon to investigate further and support with theories, for example a given framework from the existing theoretical foundation around scalable learning. It could a plausible candidate for further investigating the academic area of institutional innovation and cover up potential gaps in the academic area between the interplay of innovation, institutional innovation and institutional theory. Additionally this framework could be supported by theories as the triple helix and in the paradigm of networking theory to visualize a potential institutional construct to execute scalable learning within. To understand this gap of institutional innovation, how institutions and economic dynamics contextually interplay with a company from a macro to micro perspective would be critical to support the investigation of institutional innovation and plausible understand phenomenons as scalable learning from the perspective of institutional theory. The characteristic of which construct of capitalism a certain

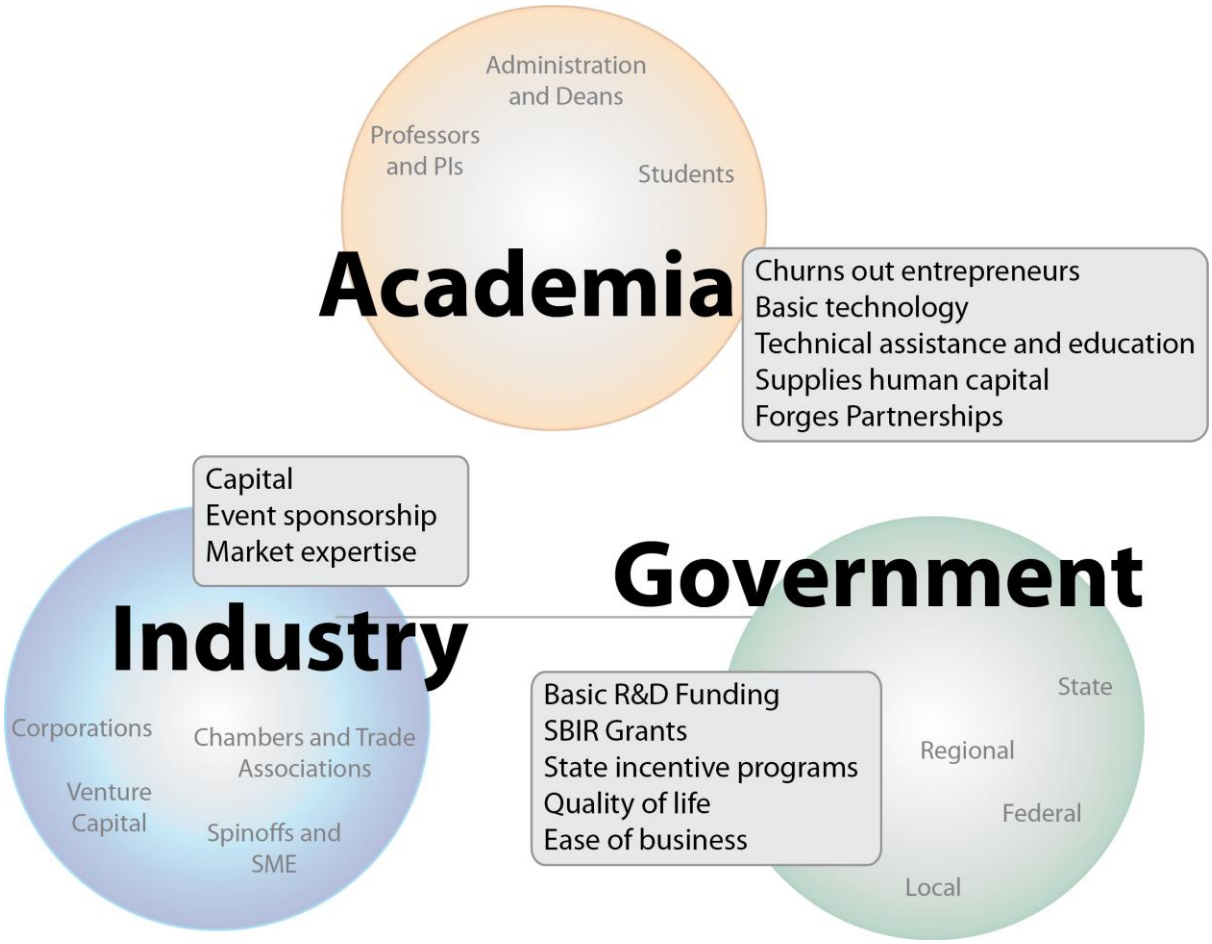
country has will have influence on the global dynamics, thereby the norms and business networks in the particular country. Same dynamics will influence the institutions of the country and the normative dimension on how institutions behave all which will have a critical effect on how to construct and execute institutional innovation in the form of e.g. scalable learning. For example if a country is very active in the construction of the capital system, could be thought regulation, legal pillar, or through guiding initiatives e.g. funding, normative pillar, this will have critical effect on how a company should design their institutional innovation strategy.

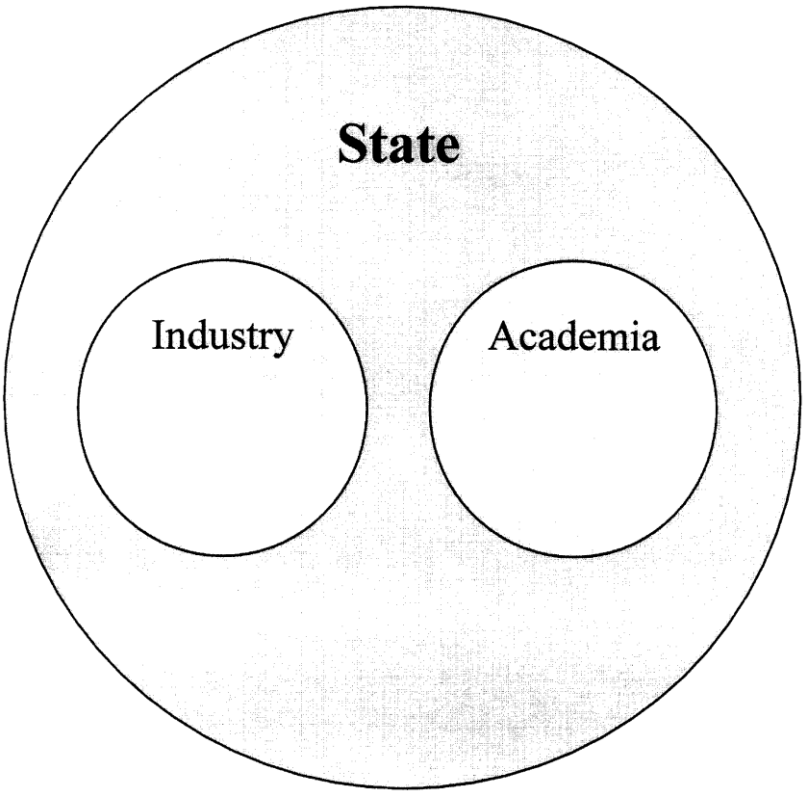
Development of framework

Institutional innovation that focus on triple helix and reverse innovation. The phenomenon of scalable learning in the settings of reverse innovation and triple helix. In this development i will present and discuss different types of frameworks that could influence the framework development, in particular the Triple Helix model of innovation will be the center of the framework development. Different illustrations of this model will be evaluated as a foundation of the framework development.

Triple Helix influence on framework

Triple helix is a visualisation of innovation in networks and could be a framework that creates the foundation how to execute institutional innovation and especially how scalable learning could be visualised and executed in a given context. First i will present a variety of different triple helix's and discuss their visualization potential and which root assumptions they advocate for, and lastly, how this could influence the framework generation of scalable learning.

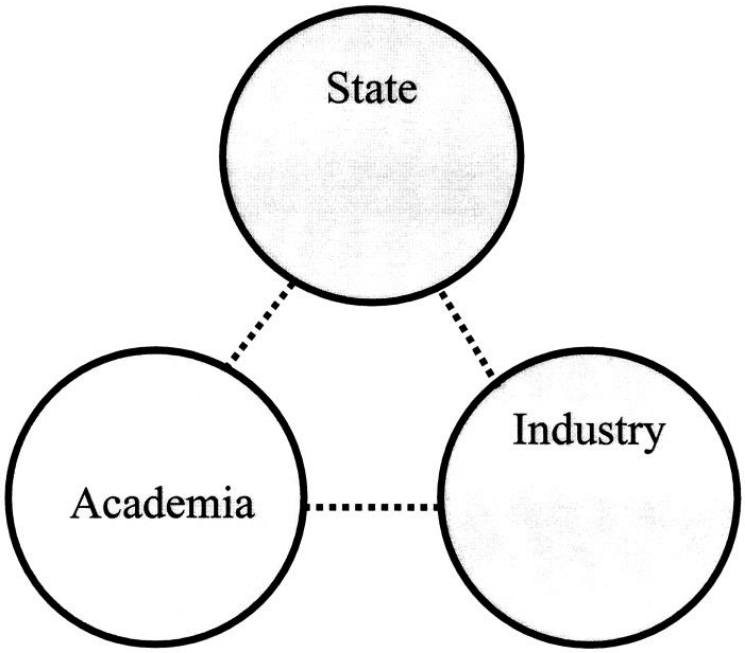




(Etzkowitz, 2000)

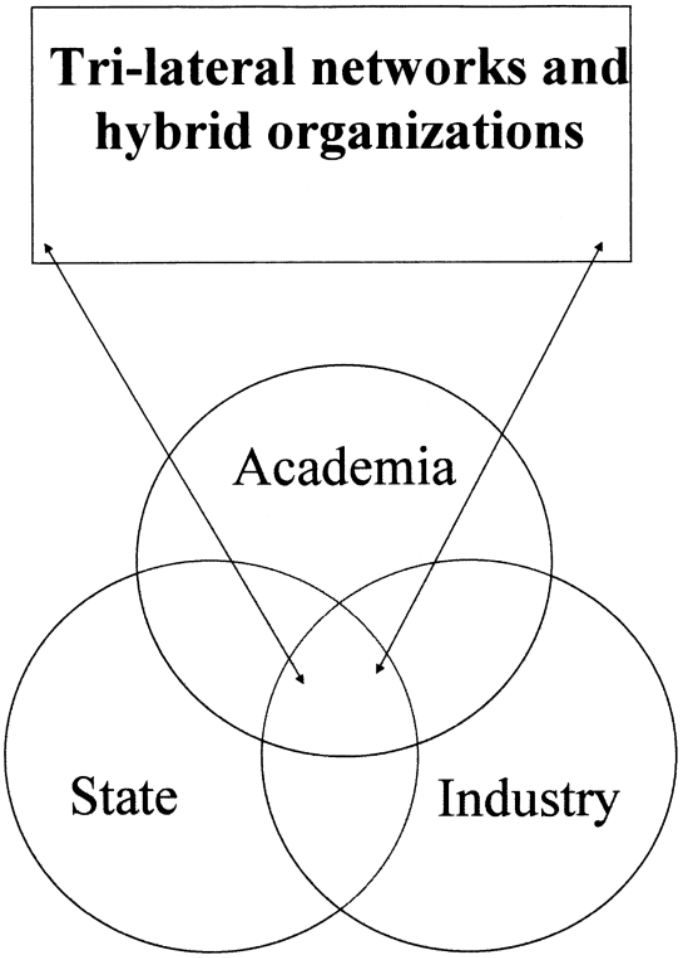
This is the more government focus Triple Helix model of innovation. This framework emphasizes on the state's role in the triple helix visualization. This construct would be best applied in contexts where the government is the totalitarian leading organ, with control over both the industry and academia. This model refers mostly to the former Soviet Union and in Eastern European countries with “existing socialism”. Weaker versions or deviant versions of this construct could be associated with some of the Latin American countries and to some extent in European countries such as Norway. (Etzkowitz 2000)

The model could also be understood in the paradigm of system theory - the two systems, academia and industry, are only normal systems in a super-system, which is the government. Also an important to notice that the systems are closed-systems; they do not interplay or interact with each other.



(Etzkowitz, 2000)

The next visualization of a government-university-industry model is the “laissez-faire” model of government-university-industry. This model is also an opposite of the first triple helix model and advocates for total freedom for each organ in the model and thereby to reduce the state influence, which was advocated for in the latter illustration. As it is seen is the organs more enclosed and function independently, this would e.g. be applied in countries where the academia is more or less self-funded, the industry has more autonomy and the state is in relative lesser collaboration/interaction with the other two organs. However in the pursue to weaken the role of the state, the framework also has closed systems, which provides lesser interaction and knowledge sharing between the organs. (Etzkowitz 2000)



(Etzkowitz, 2000)

The latter two models are rather "extreme" in either a totalitarian role of the government or a close to non-governmental role, since both frameworks focuses on the role of the state depending on context of the institutions, rather than focussing on knowledge creation and innovation. These frameworks could also be very relevant for MNCs that want to assimilate in focal environments, where the current institutional construction is similar to the first two models. The 3rd version of the Triple Helix model of innovation is more knowledge creation focussed, and the organs are open systems, which interacts on a trilateral level, with hybrid organisation. (Etzkowitz 2000)

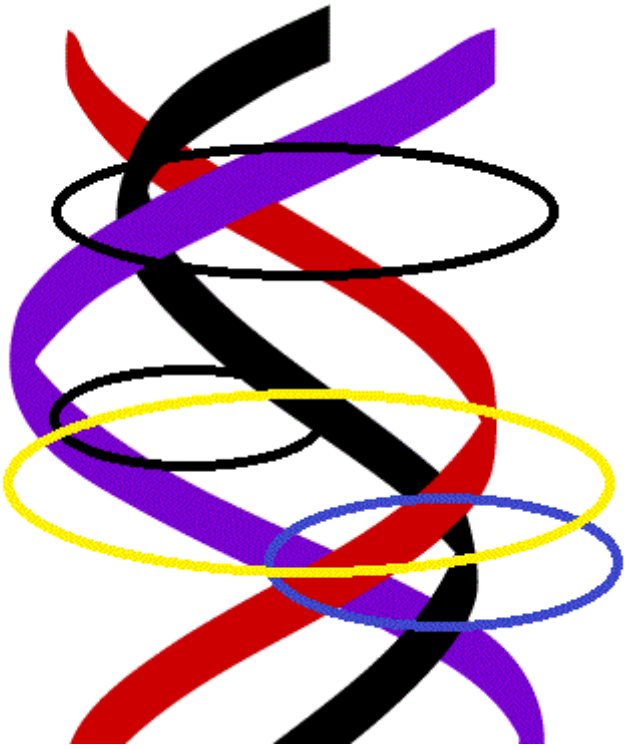
As mentioned would there be institutions for MNCs where the government plays a big role, where the first model of the triple helix would be more accurate to the context, however it will have some technical and functional disadvantages in the creation of knowledge and innovation generation e.g. "bottom up" initiatives(Etzkowitz 2000), which would emerge from either on a micro level or either minor academic projects, which would be overseen and drown in the static central governance of the totalitarian state.

In the most cases of the institutions is the 3rd version of the Triple Helix the desired construct, a construct where the government are not controlling nor avoiding the Triple helix, but rather encouraging and to some extent incentivising the path and projects that lead to creation of knowledge and innovation generation on a trilateral level. This could e.g. be activities as university spin-off firms, initiatives for knowledge based economic development and strategic alliances among firms from different industries with different levels of technology, in a variety of sizes(small SMEs under the wing of larger MNCs) (Etzkowitz 2000) All these models explain the given institutional constructs that could influence the visualization of the framework development that captures the gaps in the academic field between scalable learning, the global swift in institutions and the network theory as visualized in the Triple Helix.

The development of network-knowledge-learning in a framework.

The individual learning will be the majority of learnings in networks especially on a micro level as in scalable learning, however on a macro level will institutions also create knowledge by aggregation of the individual learnings or learn collectively, therefore would knowledge creation be a more applicable term to capture the total learnings. Therefore I advocate that the networks of scalable learning on a macro level could be called scalable knowledge creation networks. This further brings us to the name of the develop framework:

The Network of Scalable Knowledge Creation



This network of scalable knowledge creation or networks of scalable knowledge creation would provide a flow of knowledge on different levels and could be applied in the Triple Helix model as networks between the government-university-industry. This framework is inspired by and much focussed on the Triple Helix's hybridization of organization or in this case the networks across the organizations. Also in the literature of the triple helix are there examples of how Universities in particular have the capacity of creating longer projects and then dissolve them again by utilization of staff that the university can re-attach to other great projects. (Etzkowitz 2000) This is the same

type of hybridization that the scalable knowledge networks can work within. The visualization of this framework is inspired by the 3rd Triple Helix model of innovation.

Furthermore The Network of Scalable Knowledge Creation could also reinvent the placement of innovative creation. If the core of these networks is interested in the Focal markets could this lead to Reverse Innovation. Reverse Innovation could also help to understand how internationalized Triple helix function from host entity to focal entity in a given network (Zedtwitz 2014).

Carlsberg key issues

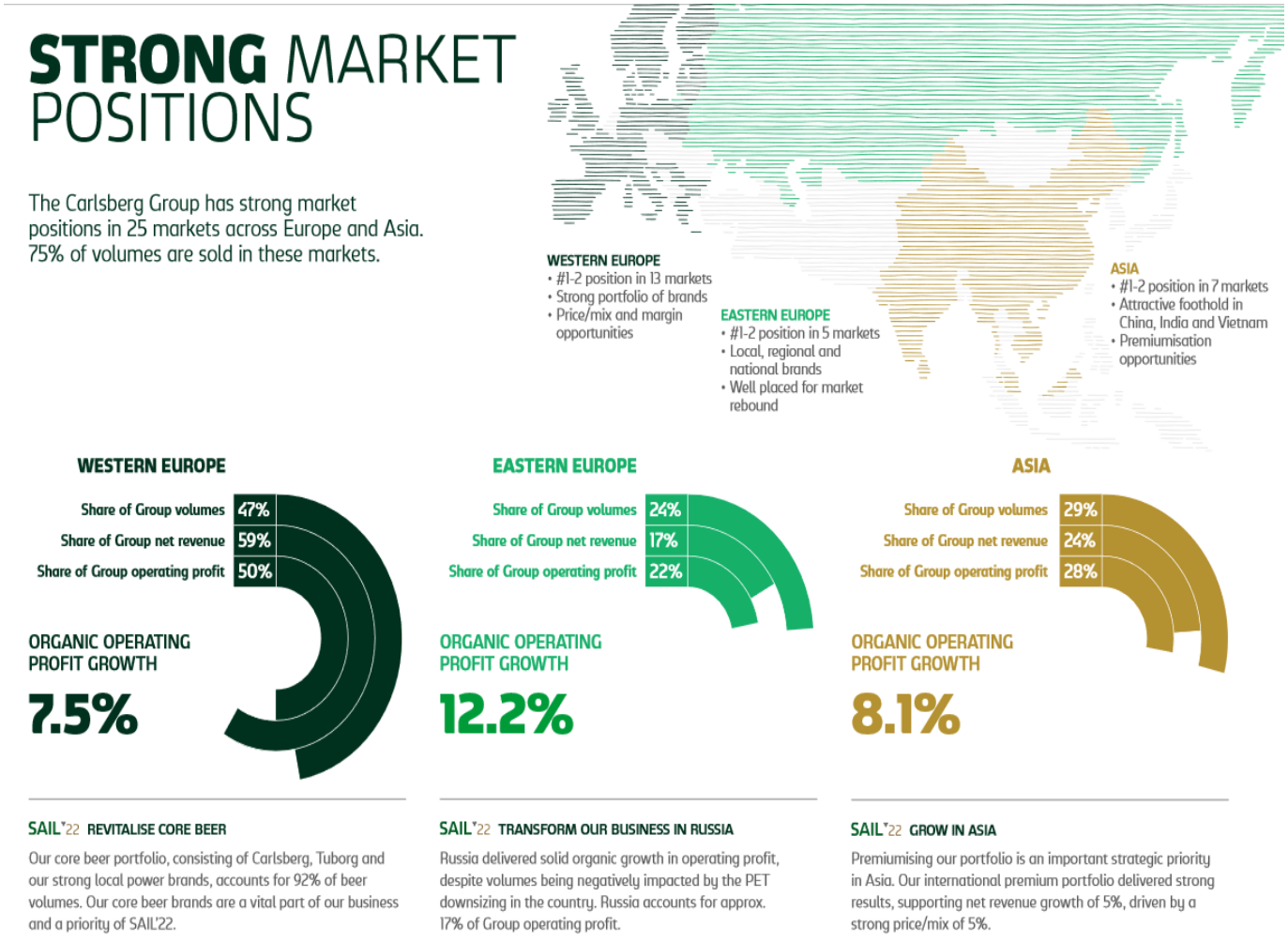
Introduction to Carlsberg

Carlsberg is a global brewery brand that have its key markets in Western Europe, Eastern Europe and Asia and was the 5th biggest Brewery in the world by 2008.(Hansen 2010 p.27)
Carlsberg's vision was also to focus on innovation in their future operations "(quote)
"*our brands will be the consumer's first choice, and we will lead our industry in profitability and growth through a culture of quality, innovation and continuous improvement*" (Hansen 2010 p.27)
This statement shows that the focus is also on innovation, however there is doubts about this have been executed throughout the activities in Asia. Carlsberg was focusing their strategy in China by entering the west Chinese market, where they had over half the market share.(Hansen 2010 p.27)
However the strategy was also to approach the eastern Chinese market, however not necessary obtain a dominant position. (Hansen 2010 p.28) Today however they still have around half of this market with a modest increase.(Annual report 2017 p.23) and while the strategy back then was to gain a position in the western market, was the intentional plan not to stay in West China forever and the former CEO Niels Smedegaard Andersen stated in 2005:

"We are in China to make a position and we are not counting on making money in 5-10 years, Carlsberg has to make new markets."(Hansen 2010 p.29)

However it could be interesting to look at Carlsberg today and view their current position and if they still just need to obtain a position or if their position has matured to the point where they are able to focus on profit and hence improve the position on value rather than market share. Because with some stagnant markets would it of course be good to keep other markets, but could Carlsberg also reinvent these markets simultaneously? Some of the key markets are also toned by political uncertainty and some of Carlsberg's greatest risks today are possible nationalization of assets. (Annual report 2017 p. 33)

Carlsberg's current position



(Annual report 2017 p.5)

A very interesting aspect of Carlsberg economic structure in their key markets is that the biggest market on revenue is Europe and Carlsberg biggest market, however in terms of profit their other markets have a higher part of the group's total profit in relations to their respective share of group net revenue.(Annual report 2017 p.5)

Asia is a however really interesting in term of the economic structure for the group on this market. This has several reasons, firstly opposite to the European market does the Asian market have a higher revenue to profit ratio. Carlsberg simply has a higher profit/revenue ratio and their ebita is better on this market. This was the first at more obvious reason, however in terms of more strategic perspective, Asia is the group's second biggest market measured on every of the presented key

ratios and therefore does Asia have an critical and important position for the group. Carlsberg's 3rd market is Eastern Europe, which as well is a very important market for the group with the same good revenue to profit ratio, however here we meet some challenges from an institutional perspective since a big part of the Eastern Europe market is based in Russia. On a political level Russia and the groups home market Europe have in recent years had instability in the diplomatic interaction and risk of group assets getting frozen in Russia. (Annual report 2017 p.33)
This makes Eastern Europe as a market, despite its interesting key ratios, a weak strategic position from a strategic and institutional perspective. (Annual report 2017 p.5)

This brings us back to the Asian market, which is the new focus for profit margin. And there is a portion of untapped opportunities in the Asian market. The volume of the group in Asia is relatively high, their second biggest and in terms of possibility does Carlsberg have the opportunity to expand that especially due to countries like China is a big market and therefore there is also opportunities for an untapped market, in opposition to the European market which is matured and as the ratio shows relative stagnant.
So the Asian market is interesting in both volume possibilities and it has a high profit margin. This will also have an interesting possibility from an innovation and institutional perspective, how to develop the current and future operations in the Group's Asian market.

Despite the Eastern European market being highlighted as the leading market in organic operating profit, is it still the 2nd tier market for Carlsberg for two reasons, in recent years Carlsberg have been focussing on developing their Asian market as a growth market due to the political risk of particular Russia. From an Institutional perspective this is relevant, however, another interesting point to investigate is the potential for innovation from an institutional perspective and how different nations Institution can stimulate or negate innovation for Carlsberg. This will be relevant in terms of institutional Innovation as well, if the domestic institutions work against the intended institutional innovation that is needed to achieve value creation for the Carlsberg Group.

Development of future operations

The current development of the Asian market has been by acquisitions of subsidiaries, which have been one of the reasons to Asia position in the group today. However as the annual report states have the raise and growth been flat, this is due to fall in Vietnam and India (annual report 2017 p. 5). China is however one of the group's biggest markets. This market is also interesting from and institutional perspective, in how to operate in the local institutions and how to operate the focal subsidiaries. The current development and strategy of vertical integration has had some challenges in this market. Carlsberg should perhaps look for other ways to explore the opportunities of growth in the Asian market in particular China. Instead of the current position of scalable efficiency Carlsberg could try other ways to stimulate their institutional innovation in China. (Annual report 2017)

From an innovation perspective is there also an opportunity for premiumisation in the Asian market, which means that Carlsberg in e.g. China could sell more high-end and more expensive products (Annual report 2017 p. 6). This could benefit from institutional innovation, in the need for a higher value, to innovative not only the current Brands, but innovating local brands and by this way working towards reverse innovation. The current strategy for Carlsberg has been a position in the low-end breweries by horizontal integration mainly in the West of China (Hansen 2010 p.28). These locations are less prosperous than the wealthier East China, where the possibilities for premiumisation might be achieved. (Annual report 2017 p. 6)

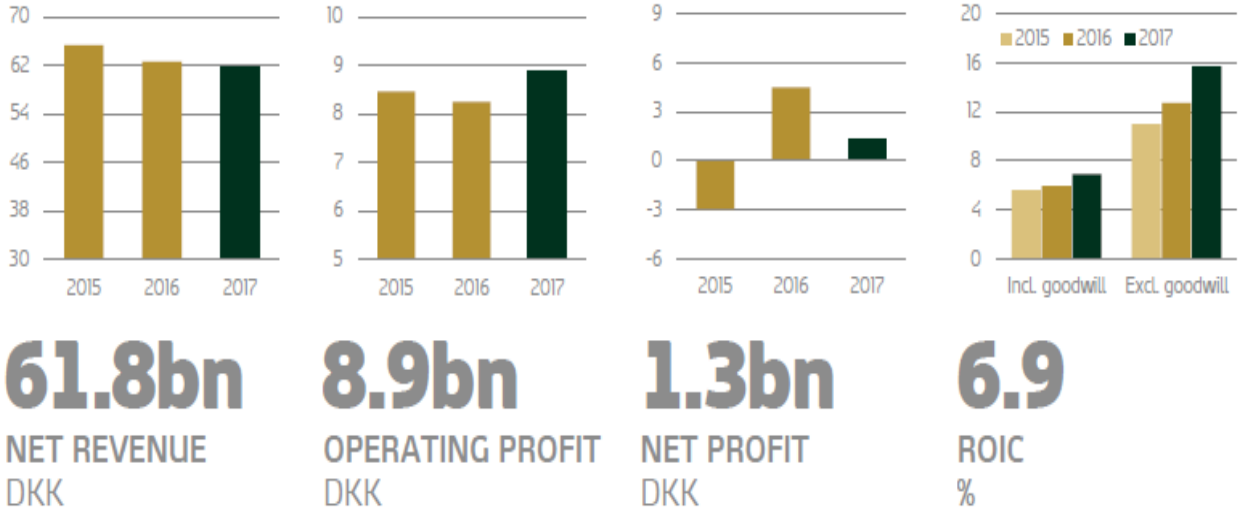
The future operation could be inspired by premiumisation, reverse innovation, and institutional innovation. In the possibility of the market in East China there will also be possibilities in the organization and possibility for innovative and strategic partnerships. One possibility could be Innovation hubs in e.g Shenzhen that lately have been a major Innovation City in China. (The Guardian 2014)

To elaborate on the idea of reverse innovation in Asia from the perspective of Carlsberg current position (see position table), could future operations with focus on innovation be justified. Currently The group has a stagnant market in Europe, a frozen market in Russia due to institutional issues, where the Asian market with China in focus could be prosperous from both an innovation and institutional perspective. Certainly the current position in Asia justifies a strategy focussed on

reverse innovation in China, with 29% of the volume sold as a measure of quantity in Asia, but also where 28% of the profits are gain in Asia, which is the true measure of quality of the operations. By these margins of the Asian market, where most of the activities of the Carlsberg group are based and the market is not threaten or frozen due to political risks from an institutional perspective, the question becomes how to establish qualitative strong innovation networks in Asia, where eventually triple helix strategy from an institutional innovation perspective could come into play in pursuit of reverse innovation in Asia. Especially in countries of the Asian market, like China, where the institutions or the networks might stimulate institutional innovation for Carlsberg, where other countries with lesser innovative institutions like India or Vietnam, as highlighted, might not be the intended host for a Carlsberg innovating center. With a high level of innovation networks for Carlsberg, they might in the end also be able to utilize their reverse innovation developed in China to reinvent their stagnant home market in Europe, where the total percentage of the groups revenue is 59%, but the total percentage of the groups profits are 50%, therefore they have a negative profit margin.

In relation to the reverse innovation in China, which also could help with the stagnant market in Europe with not only the classical innovation or the technological innovation, however also with the institutional innovation, this is due to that the new innovative networks could create new processes. This may might not increase the quantity or thereby the volume, but it could increase the quality and the profit margin in Europe, which would be the main issue in the European market where most of the profits are relatively low in relation to other markets. One of the main issues in the home market is that profitability is relative low in relation to the prime market of Asia.

Financial position of Carlsberg



(Annual report 2017 p.7)

The Carlsberg group has suffered a stagnation of 62 billion DKK in net revenue as seen on the graph in the 3 years period. In 2017 the organic growth was 1% supported by the Asian market's prosperity. However yet due to low organic growth in revenue The Group manage their cost structure and thereby have a organic growth by 8.4% in operating profits, which was contributed by all 3 regions positively. (annual report 2017 p.7) This is a sign that Carlsberg in the 3 year period have actually had value creation in the organisation, and since this is operating profit, the group simply have had value creating in their production. If this for example was gross profit, it could very likely have been the prices of a supplies that have had been adjusted and maybe the suppliers that made improvements, however since it is operating profits it indicates that Carlsberg partly have control over the processes of the variable costs. This would also be interesting to look into, since this could be a sign of innovation in the operating management and process value creation, which also is indicated by the group that the organic growth is due to value management.(annual report 2017 p. 7)

The group have a modest result this year with net profits on 1.3bn DDK and as the graph shows has the last years result been rather stagnant and sometimes in the red, thereby is this year's

performance on net profits not particularly influential. Actually is it stated that the result adjusted for certain items and after tax was 1.3bn DDK, hence net profit can a complex key number to deduct from. Especially in terms of innovation and the value creation of internal projects would other key ratios like ROIC be better to give a transparent view of the value creation. (annual report 2017 p. 7)

Some of the most relevant key ratios in regards to future investments in the presented markets could justifies with ROIC. In addition to the Asian markets strong performance, is the return on invested capital in Asia also strong. In general all regions had a good ROIC and the Carlsberg Group actually had an increase in ROIC of 15,6 % excluded or without goodwill in 2017 in their total operations, however goodwill included 6,9%.(annual report 2017 p. 7) It is stated that the relative high return is due to particularly strong growth in Asia. This ratio is in particular good to inform about where the value is created in projects and this could be if there is added more value to the process e.g. due to innovation. Other ratios can be miss guiding in value creations and many ratios like Profit Margin also accounts for the return on foreign capital, where ROIC solely focuses on the return on equity.(annual report 2017 p. 7)

Carlsberg key Issues, what to do next?

Carlsberg focuses on their Asian market, which could contribute to a variety of possibilities. First of all is it the prime market with the highest activities and profit, which have no negatively institutional outcomes or impacts, rather the opposite. The Asian market may not have a positively institutional impact on the group by an old school institutional trade point of view, however the internal institutional dynamics and synergy could perhaps prove to be a positive institutional impact on e.g. innovation. These assumptions will be further investigated and discussed in the following application and discussion of the developed framework in relation to Carlsberg.

Discussion of Carlsberg and framework

Carlsberg and Innovation

Since Carlsberg has most of its Asian activities in the west of China, which is a lower income area yet to utilize its future potential, has the previous activities not been focussed on innovation and high profit margin, however the focus has been on creating a position as stated in the introduction.(Hansen 2010 p.27) In recent years Carlsberg have focussed their activities through vertical integration and economies of scale(Hansen 2010 p. 28) and their innovation strategy has been dominated by more exploitative initiatives. Going into the west of China to gain positions, and most certainly their activities in the Western European market have been more about stability in revenue rather than creating value for the return on investments, investment that Carlsberg need to reinvest in projects that focus more on innovation. Simultaneously does Carlsberg have a foundation called the Jacobsen foundation that has the mission to fund innovative projects. If Carlsberg could manage to invest in more innovative projects, it could maybe enhance its explorative innovation activities, which in the long run could lead to radical innovation, higher profit margin and return on investment, which could be used to finance both the exploitative and explorative innovation strategy and by this be a critical trade-up for Carlsberg. This could challenge the classic trade-off between exploitative and explorative innovation strategy that one of the two strategies could only be pursued.(March 1991) One could argue that Carlsberg have had a exploitative innovation strategy in West China, which now on short-term key ratios makes Asia attractive. However it is known that a exploitative innovation strategy and having more exploitative initiatives could be effective in the short-run, however in the long-term strategic perspective it could be self-destructive (March 1991) and with a stagnant European market, a static and institutional challenged Eastern European market, the Asian market is the last hope for Carlsberg to build up an explorative innovation strategy.

Innovation and institutions in China

The institutions of China have in recent year been liberating their markets and initiating policies that are more open for FDI's. In the mid-1990's the institutions adopted a variety of factors: Liberalization of requirements of for foreign investors, critical investments in infrastructure, reduction of protectionist tariffs and most interesting the establishments of special economic zones. (Hansen 2010 p. 13) These Zones have special institutional conditions and have provided China with rapid growth and urbanization. These Special Economic Zones have turned small rural cities

into urbanized metropolis and megalopolis, same policies which lead to the so called mega innovation hubs as Shenzhen, also known as The Silicon Valley of China, that once was a market town of 30.000 people and which houses close to 12 million in population today and up to 15 million seasonal. (The Guardian 2014) The zone is home for worldwide known high-tech companies as Smartphone-conglomerates like Hawaii and One Plus. The institutional conditions under the Special Economic Zone in Shenzhen also make it an attractive place for start-ups, which is seen in the innovation hubs and mega incubators that is inhabited by foreign start-ups. (The Guardian 2014)

Such innovation hubs would be key knowledge centres for Carlsberg to build up their R&D centres close to. Even though that Shenzhen is known for high-tech electronic industry does it still have a high level of human capital, which could be utilized in different parts of the Carlsberg organization. Also does Shenzhen have an industrial zone that could support the production needs for prototype etc. (The Guardian, 2014)

From a government and institutional perspective does Shenzhen also have some norms e.g. was the city very aware about the issue of pollution and the local institutions made initiatives to replace the lesser sustainable manufacturing with a high tech and green industry. (Shen 2017). As mentioned before is the reason that Shenzhen achieve rapid economic development because of the special economic zones in the 1980's, which is a part of China's Open Door Policy. This was achieved through FDIs from Hong Kong:

> *"Since then, incoming investment, particularly foreign direct investment (FDI) from Hong Kong, export-oriented manufacturing activities, shipping and port businesses, and the subsequent agglomeration of talents, technology, and other industrial sectors have been contributing to the city's rapid socio-economic growth"* (Shen 2017).

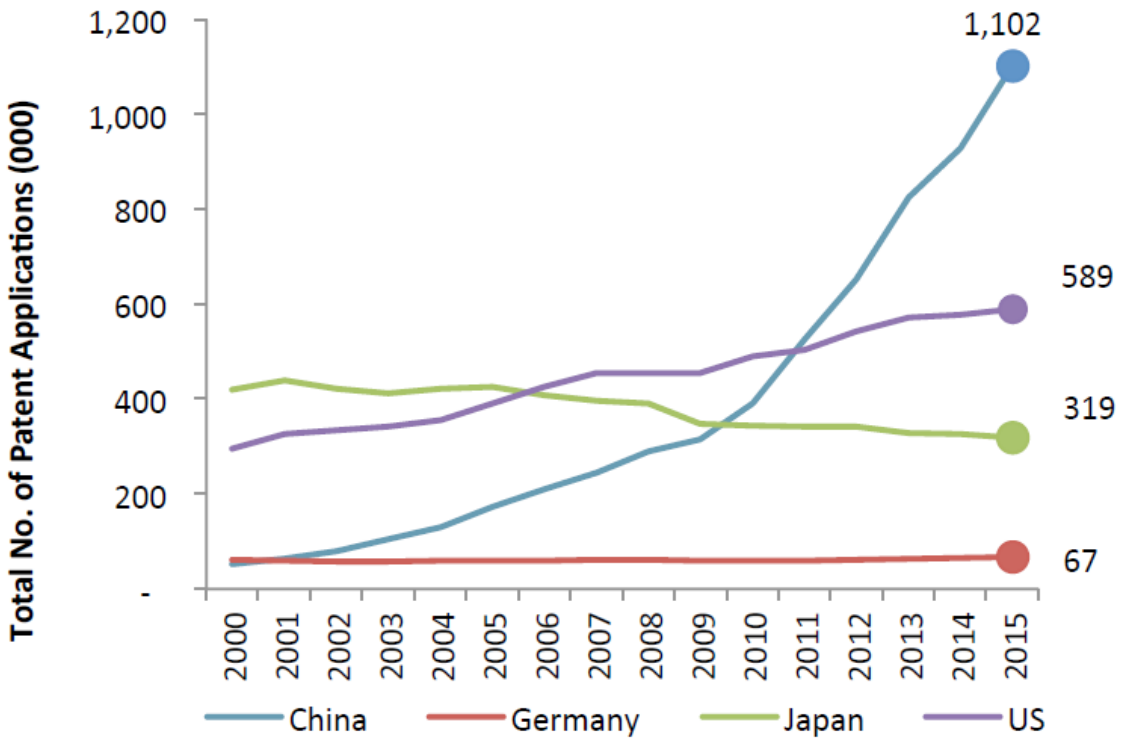
Also domestic investments contributed to the growth and as a frontrunner of economic reforms, has Shenzhen have not only achieves the nationwide growth as china has, but also successfully initiated innovation measures that have inspired the rest of the country.(Shen 2017). Some of the key critical factors that have been leading Shenzhen to success is e.g. the co-existence in innovation particular in strategies and policies, and the management of stakeholders, especially the active involvement of

governments. (Shen 2017). The economic globalization, global warming, economic crisis etc. is now on the agenda of solving, economic, social and urban issues. Not only is technological innovation popular in China, but also urban and regional development, institutions and social management. (Shen 2017). Areas which could be support through institutional innovation, which would be a critical dimension in the holistic development in China and Shenzhen.

These market dynamics and the institutions of China is interesting in relation to the market form of China. Even Though, China has an authoritarian form of capitalism(Dickens 2015), which in some contexts can be static and simplify the economy, does China still have some context-based market dynamics that diversify the economy. This diversification of the economy could be supported by initiatives like the Special Economic Zones, which as stated provides a variety of innovative, growth-escalating and urbanization dynamics in the economy of China.
This could be an interesting strategic position for Carlsberg in terms of a center for its networks of scalable knowledge creation, if Carlsberg could utilize the high-tech industry of Shenzhen in their production and R&D.

So to put into perspective how do we know Shenzhen relatively is a prosperous innovation center? One parameter could be the patents applications:

Figure 1. Total Number of Patent Applications by Different Countries in 2015



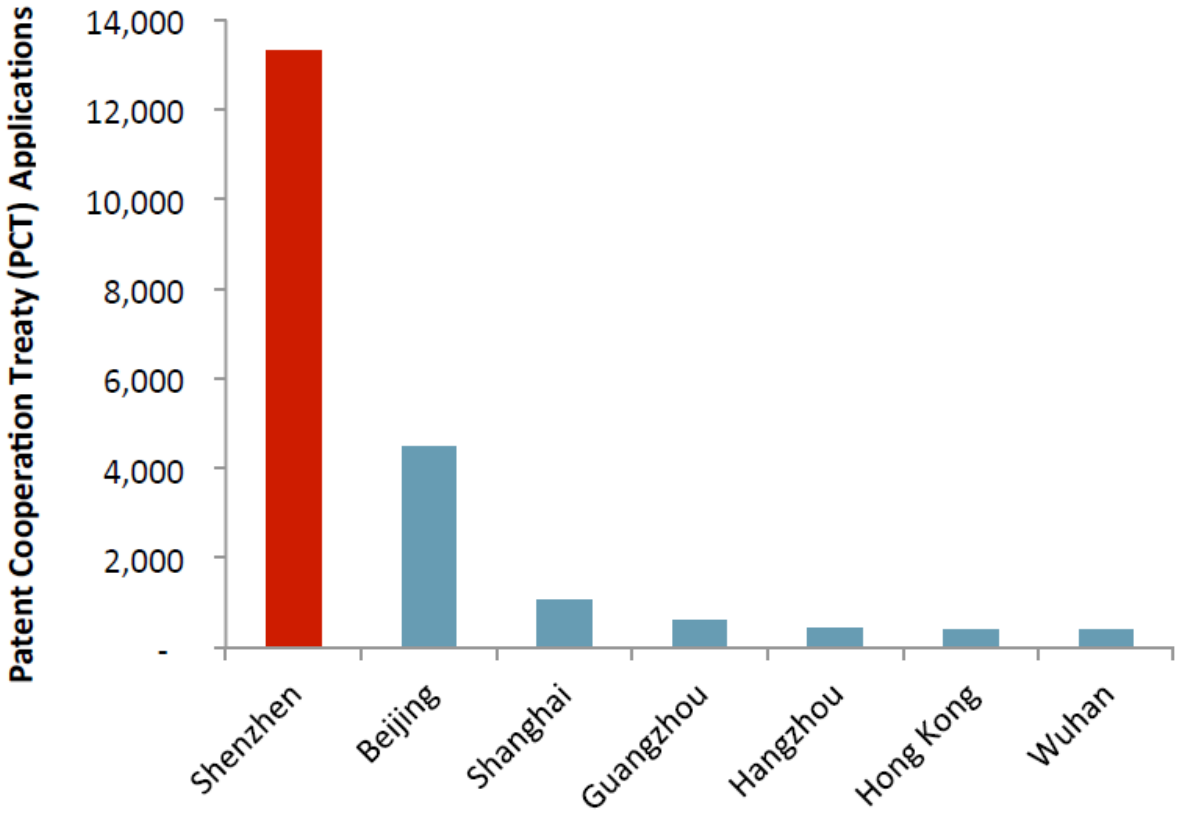
Source: World Intellectual Property Organization

(Fung Global p.5)

As the data shows does China since 2009 had an exponential increase in applications of Patents, relatively to other Major developed countries such as Japan, Germany and USA, which all had a either a continually or more stagnant trend in Patents. In 2015 China had 1,102,000 total Applications for Patents, where they in 2009 only had around 3,500,000.

However how are these Applications allocated domestically in China's major Cities and innovation hubs?

Figure 2. Total Number of Patent Cooperation Treaty (PCT) Applications by Chinese Cities in 2015



Source: The State Intellectual Property Office of the PRC

(Fung Global p.5)

For once we can see how many yearly applications for Patents several Chinese Cities has in 2015. As the Graph shows is the vast majority of Patents filed in Shenzhen with around 13,800 a year, where the only other city close to this amount is the Capital Beijing with around 4,200 a year. Even though the total qualitative value of each pattern is hard to quantify by merely Patents applications, is this still an indicator of the high intellectual property that is allocated and centralized in the city of Shenzhen. Taken into account the former information and qualitative statements of Shenzhen's innovation hub status would this match the data presented that advocates for possibilities of Shenzhen. So not only is there a correlation between the Patents applications and the millions of residence in Shenzhen, there is also causality due to the triangulation of the qualitative and quantitative statements.

(Fung Global)

The 2020 strategy for the planning by the local authorities has a special strategy for each zone of Shenzhen. This could interesting in terms of placement of potential R&D and innovation hubs, also in terms of which synergies could be utilized from the ecosystems in Shenzhen. Under here are the stated zones in English.

• Qianhai: A Hong Kong-Shenzhen service center, focusing on high tech, education, art and logistics services.

• Futian: A political, financial and trading center.

• Luohu: A financial and trading services center.

• Longgang and Pingshan: A modern heavy industrial base.

• Longhua: A transportation and logistics hub.

• Guangming: A local high-tech and eco-agricultural base.

• Aerotropolis: An international logistics and supply-chain base.

• Yantian: A leisure tourism and logistics hub.

(Fung Global)

Here is an overview of the demographics and key economic numbers of the Chinese cities below.

Figure 4. Economic Data Comparison

		2015/2016			
		Shenzhen	Shanghai	Beijing	Hong Kong
Demographics	Population	11,378,900	24,150,000	21,710,000	7,298,600
	Average Age	33	37	36	44
	Age 15–44 (%)	73%	50%	53%	45%
	New Registered Migrants	160,000	60,000	70,000	N/A
Quality of Life	Housing Price (RMB/sqm)	4,848	3,097	3,212	15,547
	Housing Price as a % of Income (%)	42%	20%	20%	40%
	Office Rental Price (RMB/sqm/month)	258	268	383	1,785
	Pollution (PM 2.5) (ug/m3)	30	51	81	26
Economy	GDP (RMB, Billion)	1,750	2,512	2,301	2,398
	GDP per Capita (RMB)	158,000	103,796	106,497	328,941
	Average Income (RMB)	11,671	15,739	16,285	38,518
	Primary Industry (%)	0.0%	0.4%	0.5%	0.1%
	Secondary Industry (%)	39.5%	29.1%	19.2%	7.2%
	Tertiary Industry (%)	60.5%	70.5%	80.3%	92.8%

Source: Local City Statistical Bureaus/KPMG/Ernst & Young/NBS/CEIC/NDRC/IMF

(Fung Global)

In general Shenzhen has a relatively normal economic structure with focus on the tertiary industry and the secondary industry as a foundation of the tertiary industry. What is worth to notice is that the average income is lower slightly lower, this could also be indication that wages in some of the key services areas are relatively low and therefore would the operation activities be relatively affordable.

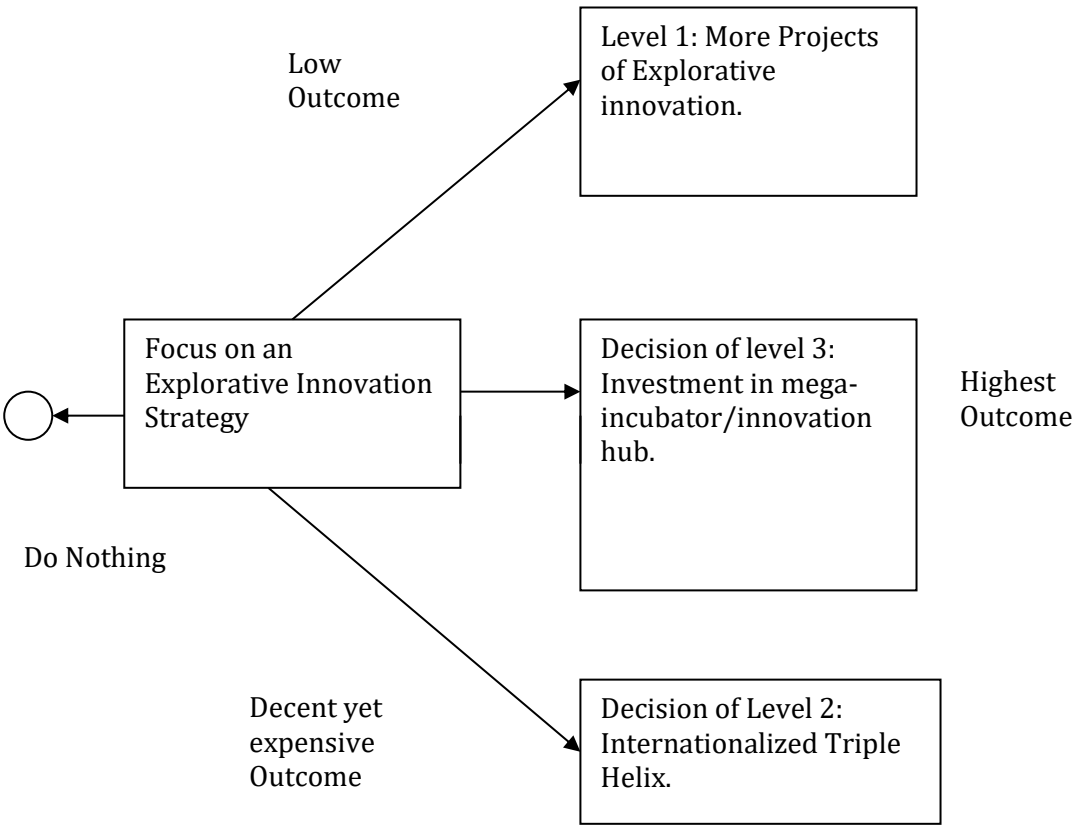
Development of Scalable Knowledge Creation Networks for Carlsberg in China

One possibility for creating a Network of Scalable Knowledge Creation, not only within a domestic triple helix in China, but also an international triple Helix within the home market of Denmark could be possible with one of Carlsberg recent R&D projects called The Beer Fingerprinting Project. (scitech.au) The Beer Fingerprinting Project that infuses both sensors and artificial intelligence to create and recreate brew's and even invent new beers. This project is across several academic institutions DTU and AU, with the support of the academia based start-up iNANO. The project also obtained public funding of 18 million DDK from Innovation Fund Denmark. (Gammelby, 2017) This type of projects could very well be supported by international Triple Helix's in e.g. Shenzhen, where Carlsberg could establish Networks of Scalable Knowledge Creation. With Shenzhen high-tech and software industry would it be good to support the development of cutting-edge technology as artificial intelligence. Also an argument could be that some of these networks of scalable knowledge creations worked with different organization depending on the project e.g. maybe on some project the network utilize the academia of the host country and the focal industry, where on other projects it is vice versa with the industry of the host country and the academia of the focal country. On the other hand, this have to be balanced to the focal institutions, however still be flexible to be a sustainable business case.
How should this be a sustainable business case? There could be a paradox between the local institutions that want balance between the exploitation of the local industry and the investment in innovation hubs and research project, which would lead to financing of local intellectual capacity, however one could argue that such intellectual capacity could also be stimulated in industry of e.g. Shenzhen.

But how would a Beer-company like Carlsberg capitalize on the tech industry of Shenzhen? Although Shenzhen is known as a hardware Mecca is there still a variety of high-end industries and especially software development is part of the future of Shenzhen due to the investments. (Fung Global p.13) Not only is software development on the rise in Shenzhen, they also have a giant in Artificial Intelligence called Icarbox, which would be interesting in relation to Carlsberg's The Beer Fingerprinting Project. Icarbox is a so-called "unicorn" or a Chinese unicorn, which by definition is a company in China, founded within past 10 years, obtained private investments and has not listed yet and most interesting valued at more than 1 billion US dollars. (Fung Global p.13)

This would obviously be interesting in terms of the particular project of The Beer Fingerprinting Project due to that it contains the use of Artificial Intelligence and that this Chinese Unicorn possibly have a large ecosystem of sub suppliers and incubator-startups, similar to iNANO, that could benefit projects alike, however also in a more general Exploration Innovation Strategy could Carlsberg consider how to utilize and capture the synergies of the Shenzhen ecosystems.
So how could Carlsberg for instance capture all this innovation and design a network base of innovation to support such exploration strategy. One propositions could be not only the utilization of their foundation to fund and pick-up starts-up as they did in Denmark, which is also a possibility in Shenzhen, but also try more systematically to grow startups by investing in a form of incubator or innovation hub for start-ups.(Fung Global p.8) Such an explorative innovation strategy would create great synergies between Carlsberg's Foundation (http://www.carlsbergfondet.dk), between its activities locally in Shenzhen and for the R&D projects it will host in the incubator, with additional independent start-ups and also it would compensate for the weaknesses that an explorative innovation strategy can have, such as high expenditures for just the fundamental of R&D projects, where in this settings the R&D projects could benefit each other and create synergies by utilizing the economics of scale, however still with the main goal of innovation generation.
More concrete, a 3-level holistic innovation strategy could be developed for Carlsberg. Firstly, they should engage in more projects such as The Beer Fingerprinting Project, which is innovation focus with a more explorative angel since it is trying to discover a platform and technology that is not yet seen, hence also a relatively radical innovation if successes-full. Secondly, Carlsberg should internationalize these projects in an internationalized triple helix with Networks of Scalable Knowledge Creation with a high level of hybridization between government-university-industry. This would be a more committed level; hence more investments, higher risks and the projects will be more independent and thus not obtain full potential of networks synergies. Thirdly, Carlsberg should engage in investing in a mega-incubator for systematically innovation projects in Shenzhen. This will make best use of the Hybrid Networks of Scalable Knowledge Creation and will gain some synergies between the networks such as economics of scale. And this will help Carlsberg in not only a trade-off in exploitative or explorative innovation, but enable a trade-up innovation Strategy of both exploitative and explorative innovation.
As we can see is the 2nd level of the strategy, where the networks of scalable knowledge creation really could be utilized with multiple institutions coming into play. The 3rd level is of course an extension of this and would rapidly create more networks of scalable knowledge creation, however

also more qualitatively strong networks due to the amount of synergies and intensified possibilities of hybridization of networks. The 1st level will be the cheapest and most applicable level of the strategy and would be the level where Carlsberg should decide with path they choose. However does Carlsberg choose to go all the way with the 3-level holistic strategy, does it make sense to place some of the first projects of the internationalized triple helix in the education and cultural district of Qianhai, since it will provide location synergies between the local universities, start-ups and other academic actors etc. This will also make the way of the 3rd level mega-incubator, since Qianhai has advantages of location close to Hong Kong and great logistic networks.



The Institutional support for innovation

To take the findings and context of Carlsberg into considerations of the theoretical area of innovation and institution and bring it up on a meta-theoretical perspective, in which theories or dimensions influences each other. Then we learn by the case of Carlsberg that the institutional settings of China, the Special Economic Zones and the local government initiatives and planning is helping in creating the foundation of institutional innovation and thereby these are a support of the institutional innovation and to execute the institutional innovation in form of scalable learning, Triple helix, Networks of Scalable Knowledge Creation etc.

This is the interplay on a macro level between the domestic institutions of China and the institutional innovation inside of Carlsberg. If we move down on a micro level, we could see how these Networks of Scalable Knowledge Creation inside the Triple Helix have an effect on the opportunities of technological innovation and the innovation strategy. So a Meta-theoretical visualization of these effects could be visualised as:

Institutions → Institutional Innovation → Technological Innovation

Learnings - the case of Carlsberg and propositions for Carlsberg

In the case of Carlsberg we learned about their operation and activities particularly in China. The possibilities of different innovative initiatives were discussed and how these harmonized or how well they adapted to different global institutions.

It is proposed that Carlsberg continues their focus in the Asian market, furthermore initiates the 3-level holistic explorative innovation strategy. It is furthermore proposed that Carlsberg executes the whole strategy, since this would generate the best outcome, however it is advised they proceed with caution and implement them on different levels in coordination with the engagement of the internal organization and the external institutions and other key stakeholders. In the longer run this could perhaps open the way of opportunities of reinventing the stagnant home market with the innovations from China and by that obtaining reverse innovation.

Conclusion

In this thesis it was discovered that it has a significant importance that knowledge and knowledge creation will be a critical part of the economy. Therefore it was investigated how such knowledge could be applied in a framework.

Initially, a theoretical discussion identified and discussed theories in the intersection of innovation and institutional theory, where a variety of typologies and frameworks lead to the understanding of the academic areas and the gaps within. Furthermore it was discovered that especially networks of innovation with institutions as support was a leading practice in knowledge creation. It was also discovered that phenomenon's as scalable learning had overtaken previous company mind-sets and strategies of scalable efficiency. This phenomenon lead to the creation of the developed framework "networks of scalable knowledge creation". These networks interplay well with the triple helix framework, which connects the university-government-industry knowledge creation.

Later the framework was applied in the case of Carlsberg, where it was discovered how Carlsberg with a 3-level holistic innovation strategy could utilize the institutional support of China and rethink their R&D activities by, investing in more explorative innovation projects as the The Beer Fingerprinting Project, initiate a internationalized triple helix and lastly execute the whole strategy with the investment in a mega-incubator. This could prove to help Carlsberg not only create a stronger R&D focussed position in the emergent market of China, but also in the long run perhaps reinvent their stagnant home market with reverse innovation.

It was discovered how institution and institutional innovation and technological innovation interplay in a meta-theoretic perspective. Where institutions supported the institutional innovation, which influences the technological innovation.

Institutions → Institutional Innovation → Technological Innovation

This thesis has covered certain gaps in the academic area, especially how the Triple helix is supported by institutions and how the scalable knowledge creation networks function within. For further research is there still uncovered aspects in academic area and as core literature advocates would multiple views and other perspectives on the institution innovation enriching the academic area further. Therefore does this thesis propose the following propositions for future research.

Propositions

1. **How can institutions affect the MNC's innovation potential due to institutional governance and policy making?**
2. **How can a MNC improve their relations with institutions in the pursuit of innovation strategies?**
3. **How can networks of scalable knowledge creation be implemented in a MNC with the intention of executing reverse innovation?**

In the first proposition is it proposed that the future research moves a little out of the multidisciplinary of international business economics and focuses on a more political science based angel to understand innovation in the perspectives of the institutions, which would give insights to how institutions act in the question of innovation and domestic versus global issues. In the second proposition it is proposed to continue in the multidisciplinary area of IBE to further understand the interactions between MNCs and institutions on the question of innovation. In the third and last proposition, it is proposed to focus more on the business perspective of the IBE academic area and investigate further how networks of scalable knowledge creations can be implemented with the intention of reverse innovation. This could also be insightful with insights from other case studies.

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