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**Disruptive technology's impact on China's sustainable
economic growth - case study of Alibaba Group**

Author: Natasja Krommes

Supervisor: Sudhanshu Rai

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Abstract

Over the year's technology have been a key driver for economic development. Especially in a developing country context, where societal development is key for generating better living standards. China has since the end of 1980s begun to develop their business system and has generated unprecedented growth rates. But, after the growth rate peaked in 2010, it has only been dropping. This trend has by scholars been a sign of a near of a middle-income trap. I argue that for China to generate sustainable economic growth rates, technological advances must be made. I find that disruptive technologies are the only innovation which can drastically change the Chinese eco-system. I will therefore undertake the research on, how can Alibaba Group's disruption impact the Chinese society towards a more sustainable growth?

I have applied a single-case study, for a more in-depth understanding of the impact. This has resulted in a holistic theoretical framework, which implies that the firm will be a focus point. I have found that due to the governance style of China, I have had to have a higher focus on the government, than for other governance styles. Key results have been that the Chinese innovation system has changed over the years to a more holistic non-linear model, rather than a linear innovation system. I have not found clear support of Alibaba Group impacting the Chinese society towards a more sustainable growth. Though it has been found that the disruption defined by western scholars have not accounted for the creativity differences between western and Asian societies. I find that the study has completed the first round of descriptive theory building, this process needs to be redone and I would suggest with a focus on creative thinking.

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LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
CPC	Communist Party of China
PRC	People’s Republic of China
BoP	Bottom of the Pyramid
NIS	National Innovation System
NICS	National Innovation Capability System
ICT	Information and Communications Technology
S&T	Science and technology
GDPR	General Data Protection Regulation
R&D	Research & Development
TFP	Total Factor Productivity
SOE	State Owned Enterprises
POE	Private Owned Enterprises
WTO	World Trade Organization
IPR	Intellectual Property Rights
MNCs	Multinational Corporations
FDI	Foreign Direct Investment
VC	Venture Capital
SCS	Social Credit System

Introduction

For years, technology has developed and changed the way humans live. The invention of electricity gave birth to multiple innovations: The telephone, the internet, the assembly line and countless others. These innovations all have in common the fact that they were a steppingstone for the next innovation and have changed the way in which we do business. Schumpeter, an economist and important scholar for the innovation literature, argues that economic growth is generated through innovations (Ruttan, 1959). This notion has had important implications for the study of economic development and has on several occasions been linked to developing countries' ability to grow economically (Christensen et al., 2001; Govindarajan, 2011; Henderson, 2006; Lundvall, 2007; Park, 2007). This will be one of the three main focuses of my paper, more specifically the issues a middle-income economy needs to overcome in order to obtain the status as a high-income economy.

Factors which limit economic growth are many, but one in particular is important for a middle-income economy. The middle-income trap has been depicted in the Economist in a special report on the mixed-income myths (The Economist, 2017). A short outline is given of various scholars' work. It is found that the relationship between economic growth and the development from a low-income country to a high-income country, can be frustrated with traps. At one point in a country's economic development they will reach the threshold to a middle-income economy. Such a status can become a curse, in the sense that middle-income countries would be squeezed in the middle, either competing with lower-income countries on price and high-income countries on advanced technologies and skills.

When a middle-income economy is stuck in the middle between two different forms of development, it can draw similarities to Christensen (2006) *The Great Disruption*. Here, it is argued that when a firm reaches the end of their consumer's needs, in terms of having developed the products features and price range to a niche market as a high-end product, the firm cannot go back and does not have the capabilities to overcome this hurdle. Hence, they get disrupted by another firm, either on price, features or completely new technology which renders the old technology. I argue that the middle-income trap and the notion of

the great disruption has similarities and could provide answers on to how to overcome these dilemmas.

I will situate the study in the context of China, which is a high middle-income economy. The reasoning for this choice is: One, a considerable amount of world population lives in China. Two, China is often seen as the engine for world economic growth. Three, policy makers have not yet found the optimal policies for lifting China into a high-income economy. Lastly, China is a communist country which means different government structures and values from that of many high-income countries.

I will in this paper describe the middle-income trap as a phenomenon. From an academic perspective, numerous scholars have looked at whether the trap even exists, the preceding events and what to do to overcome it. I will focus on the latter two. Some scholars have focused on the what is leading up to this event, so they can find out what to do differently. Others focus on the country's ability to develop innovation as a key for overcoming the event. These scholars emphasize the need for economies to develop an environment conducive for innovation, which is a complex evaluation of various factors. On one hand, the context needs to be considered, and on the other hand, the industry where the innovation comes from needs to be kept in focus. Consequently, scholars have been challenged with the development of a theory which can holistically characterize an innovation as disrupting the current institutional context. Results of such a contribution could entail a precise description on how the middle-income trap could be overcome.

The primary purpose of the paper will be to develop a theoretical framework which can overcome the issues of finding appropriate categories to measure whether disruptive technologies have transformative power in a developing country like China. The secondary purpose is to assess the Chinese business system and Alibaba's disruptive power in the system. Hence, the aim is making a descriptive theory of disruptions transformative power in a developing country context. While the aim has argued for a descriptive theory, the study will be limited on time, which also means that a complete development of descriptive theory will not be accomplished. Rather, the first iterative process of testing for anomaly will become the basis for my results. Furthermore, the complexity of the study in terms of combining two different literature streams in a context, which has proven to be different from applied literature, will challenge my

structure of the paper. Lastly, I am limited on my in-depth knowledge of the Chinese society, since I am not Chinese.

With reference to the above, I have chosen disruption and the phenomenon of the middle-income trap for the analysis of China's ability to overcome an economic stagnation. Therefore, I propose the research question of the thesis as the following:

How can Alibaba Group's disruption impact the Chinese society towards a more sustainable economic growth?

I intend to answer this research question by taking my point of departure in the disruption/innovation literature. This will lay the groundwork for an investigation of the phenomenon, which will be evaluated through the application of Alibaba Group's interactions within the Chinese context. I will use qualitative research and develop my own theoretical framework to assess the above. For structural purposes I will look to the concept of National Innovation Systems (NIS), Asian Business Systems (Witt & Redding, 2014) and (Kilkki et al., 2018). In this way, it is possible to understand the interactions which can impact China's economic growth. Since I am taking a descriptive explanatory approach, the research agenda will include three main parts; 1) Literature review, 2) Application of the theoretical framework, 3) Findings.

Structure of the thesis

This paper is structured into six chapters: introduction, methodology, literature review, analysis, findings and conclusion. Some of the chapters are subdivided into sections.

The introduction provides a general view of the need for a better theoretical framework to assess disruptions' transformative power on the middle-income economy China. It questions the role of disruption and its assessments tools. Further, the aim and scope, explains the purpose of the study and limitations to the undertaking. Then the research question is proposed, and the approach and outcomes are shortly introduced.

The literature review contains the theoretical foundations of eight scholarly articles. They include discussions on the following: Invention, innovation and disruption, Finding

disruption, The magnitude of disruptive technologies, The National Innovation System, Open Innovation and the fourth industrial revolution, Regulatory compliance and disruptive innovation in big data collaborations, Innovation in developing countries and the middle-income trap. Next is the development of the theoretical framework based on the literature review. It is described how the paper will go about answering the research question.

The methodology chapter refers to the business research applied in the thesis. All the elements underlying this project, e.g. the philosophy of science, the research design and method, the data collection and the credibility of the findings are explained.

The chapter with the analysis applies the theoretical framework. The first sections take the horizontal perspective of the society, where government is given higher focus than the consumer and industry. Government is analyzed through in-depth understanding of the business system. Further, the categories found in the literature reviews factors which the government can change, which have been evaluated through policies. Consumers are briefly touched upon and evaluated upon their purchasing power. The Industry analysis is applied according to Christensen's (2006) *The Great Disruption*. The next section deals with the vertical perspective of the analysis. It focuses on how Alibaba interacts with the horizontal layers.

The findings chapter is divided into five parts. First, it summarizes overall outcomes and how they were achieved. Second, is a discussion of my analysis in relation to the research question and how this is related to the current understandings. Three, I explain the broader influence the study has on academia and industry. Four, limitations to the study are evaluated and if repeated, I discuss what should have been made differently. Five, is suggestions for extending the research. Here I will elaborate on the choice of method.

The conclusion sets out to briefly restate the motivation for the study, its aim and scope, central results and key contributions.

Literature review

This chapter will identify key debates within the innovation literature, especially disruption. Through an extensive review and debate on the emergence of disruptive technologies, the last section aims to point towards the knowledge gap, which this paper will address.

Invention and Innovation

The importance of innovation for economic growth has long been established key authors such as Schumpeter (1939), Usher (1954) and more has found that innovation matters for economic growth. Maclaurin (1953) emphasizes the importance of science as a pacemaker of change. He applies technological advances as a measure for economic growth, as he argues that it is easier to measure than the process of innovation, which is also suggested by *Schumpeter in Business Cycles*. Maclaurin therefore divides the elements of technological advances into five elements 1. The propensity to develop pure science, 2. The propensity to invent, 3. The propensity to innovate, 4. The propensity to finance innovation and 5. The propensity to accept innovation (Maclaurin, 1953). Put differently Maclaurin looks at the process of pure science to the acceptance of innovation, which is an indicator for economic growth. To solve the measurement issue, Maclaurin breaks down the five elements and evaluates them individually. Maclaurin (1953) finds that pure science is often not a patentable invention. He argues that, to measure science, it needs to be undertaken by fields of learning. He suggests that new hypotheses need to make a significant change in the way a subject is viewed and small contributions to science often has greater importance. The best indicator to see whether the environment is conducive for science to flourish is to look towards the great contributors of pure science. While the propensity to invent is found to be measurable through patents, he highlights the importance to distinguish between basic patents and improvement patents. Furthermore, the reviews of professional research can also be a measurement for whether a society is favorable for inventions. Maclaurin highlights a well-known statement that “when an invention is introduced commercially as a new or improved product or process, it becomes an innovation” (Maclaurin, 1953, p. 105). To measure the propensity to innovate, Maclaurin argues that both new firms and established firms need to be evaluated. The innovations need to be examined over time, industry by industry, through

in-depth case studies (Maclaurin, 1953). For innovation to have success, capital needs to be present. Hence, Maclaurin (1953), argues that "...the number of new firms launched each year and the capital investment of such firms" provides for a good beginning (Maclaurin, 1953, p. 109). Another measure for established firms is plants constructed. Maclaurin finds that to measure the propensity to accept innovations three requirements must be met; measuring, explaining and predicting the differences within regions and cultural groups. To measure this, he uses an assembly of growth curves, which should come from a variety of products, services, industries to indicate which generalization can be made of the time it takes for the masses to accept the innovation. Through these five suggestions on how to measure innovation from invention to innovation and its relation to economic growth, Maclaurin concludes that this could become a guide for public and private investment policy.

Maclaurin's 1953 article is from an age before the internet and before innovation became the buzz word that it is today. This is important to have in mind when reading his article. Maclaurin (1953) has been concerned with finding ways to measure the adoption of innovations into the economy. This is not a new phenomenon. In Ruttan (1959) he looks to two profound innovation scholars; Usher and Schumpeter, both concerned with the process of innovation. Usher outlined a four-step development of the individual invention, firstly perception of the problem, secondly setting the stage, thirdly the act of insight and lastly critical revision (Ruttan, 1959). Drawing on Maclaurin's "propensity to", there is not a large difference between Usher's cumulative synthesis theory and Maclaurin. The biggest differences are Maclaurin's higher focus on context while Usher introduces the critical revision.

Another important point Maclaurin makes, is that the more developed a country is, the higher likelihood a major innovation will be adopted by the public. This is an interesting observation, as authors such as (Govindarajan, 2011; Hart & Christensen, 2002) has found that innovation from the Bottom of the Pyramid (Bop) can in fact radically change a whole industry. Further, Maclaurin looks at the propensity to innovate and argues that both entrance and established firms can be a measurement factor for this evaluation. The key point here, which is lacking, is the fact that Maclaurin does not establish what a firm needs to do in order to become innovative. Teece (1986) on the other hand, tries to figure out what determines the share of profit captured by the innovator, which can lead to a

better understanding of reasons for and how to sustain innovation. This can in turn also affect the way we should measure the propensity to innovate. The reasoning behind this logic is, that we need to understand firms' reasons for innovating or not, and which stage of "disruption" the industry is in. Teece (1986) found that the boundaries of firms' are an important strategic variable, which can determine the success rate of the innovating firm (Teece, 1986). The factors which can measure this are argued to be complementary assets. It has been showcased that the measures found by Maclaurin (1953) are too narrow to fully comprehend the magnitude of innovation's effect on economic growth.

Lastly, Maclaurin (1953) identifies the innovator as an individual with an imagination which is keen to resolute tempered with a clear business judgement, persistent to overcome disaster, obstructions and fear. He/she has the ability to delegate tasks and must be bold so as to instill confidence in the innovator's financial supporters (Maclaurin, 1953). Though these characteristics are important for an innovator, they are not in particular specific for an innovator. Rather, the description can be applied to many business leaders. These distinctions that Maclaurin has made throughout the article has been useful for a framing of possible measure which need to be accounted for when trying to measure the impact of innovation on economic growth.

Maclaurin (1953) evaluates economic growth through innovation but does not make reasons for why firms should adopt innovation. Furthermore, the measures are too narrow to fully comprehend the propensities to adopt innovation. His model of "propensity to" make a probable rate of development, based on past evidence and the current propensities of the country to invent, innovate and accept innovation. This leads to a suggestion of an optimum rate of economic growth, which should be based on the evolutionary improvements in the institutions affecting the propensities. I argue that this is the beginning of what is known as the NIS. I will in the later theoretical framework development use Maclaurin as a base for which measurements to account for.

Finding disruption

The notion of disruptive technology was first introduced by Clayton Christensen in 1995, it has over the years become a buzz word used both in the academic field and in the corporate environment. I will in this part of the literature review find the standardized

definition of disruption. I will take my point of departure from Christensen et al. (2001) *The Great Disruption*. The article tries to answer how the Japanese economy could stagnate for a decade, which they contribute to the lack of understanding of the microeconomic drivers of disruptive technology (Christensen et al., 2001). It is found that Japanese firms have not been able to overcome the innovators dilemma¹, and thereby not creating or engaging in disruptive technologies. It is important to note that Christensen in general views start-ups as a key driver for disruptive innovation. Therefore, according to Christensen et al. (2001) the problem the Japanese economy faced, was an environment not favoring start-ups and managers failed in foreseeing disruptive technologies, which many leading companies faltered to. Overcoming the innovators dilemma, Christensen et al. (2001) suggests the fostering of creative destruction, which automatically creates disruptive innovations, hence supplanting existing firms with new ones. Even though, the Japanese government has tried to make policies helping to reform the financial system and industrial structure, Christensen et al. (2001) found that the solution would more likely weaken the ability to foster new disruptive business. Hence, Japan are facing the dilemma of creating a creative destruction environment. Christensen et al. (2001) interestingly concludes with a focus on developing countries as the source for sustaining innovation and developing disruptions.

The focus of the article has been on how incumbent firms can overcome the innovators dilemma. In doing so, the article neglects the disruptors dilemma, which is delineated by Ansari (2016) in an evaluation of TIVO in the American television ecosystem. In the literature it is found that, liability of newness, lack of legitimacy, customer indifference, incumbent skepticism and lack of cospecialized assets all are implications the disruptor need to account for (Ansari et al., 2016). It becomes clear through a longitudinal study from 1995-2012 that TIVO needed incumbent firm's assets to succeed, e.g. in the case of reaching critical mass in subscriptions. Competitors saw a possible future revenue stream and invested in TIVO (Ansari et al., 2016). It clearly indicates that; even though incumbent firms have reached high-end status and does not have the capacity or a need to be disruptive yet, they can share their cospecialized assets

¹ Defined as a disruptor reaching the high end of their own market. Hence not being able to meet their needs for growth and will loose profit by going "down" in the market.

with a possible disruptor and gain a new revenue stream. This is a general critique of the focus of Christensen's disruption.

On another note, Christensen et al. (2001) tries to understand how the Japanese economy went from high growth rates with a positive outlook to stagnation which lasted almost two decades. Interestingly, creative destruction is found to be the key to overcome this stagnation. In Abernathy & William (1985)'s article Schumpeter's creative destruction is applied and understood as "...the extent to which it alters the parameters of competition, as well as by the shift it causes in required technical competence" (Abernathy Kim & William, 1985 p. 13). Further, it is rather an innovation that disrupts and destroys, which entails a need for new competences (Abernathy & William, 1985). Though the creative destruction found in Abernathy & William (1985) is of an older date than the one found in Christensen et al. (2001), it has clear similarities. While Christensen et al. (2001) has come with well weighted arguments for how Japan could overcome their stagnation, the theory of Disruptive innovation has some important implications. Authors such as (Adner, 2002; Danneels, 2004; Henderson, 2006) all have found the theory lacking in one point or another. These criticisms Christensen himself has tried to address in the article *The Ongoing Process of Building a Theory of Disruption*, where the important point is to have a body of understanding that asymptotically approaches truth, hence literature trying to find the truth (Henderson, 2006). The contributors to the theory which Christensen (2006) identifies as valid is Adner (2002)'s notion of asymmetric motivation in consumer evaluation of technology and their preferences. Adner (2002) finds that "...the essential aspect of consumer choice which allows for disruptive displacement may be consumers' decreasing marginal utility from performance improvements beyond their requirements, rather than a new found appreciation for previously marginal attributes" (Adner, 2002, p. 685). This also explains that consumers did not prefer the 3-5-inch hard drive due to its attributes but rather due to lower price (Adner, 2002). Such criticism has implications for Christensen et al. (2001) and the understanding of how Japanese firms should interact with consumers and disruption.

Interestingly, this article focuses on the potential of disruption in a former fast-growing economy, which will also be the focus in this paper. The disruption identified by Christensen et al. (2001) has been found to lack factors such as consumers preferences, the disruptors dilemma and a societal context. All in all, a quote from Adner (2002) sums

up the whole discussion: “While disruption is enabled by sufficient performance, it is enacted by price” (Adner, 2002, p. 686). This citation showcases the problem with disruption literature in a nutshell. It is hard to make it more specific without neglecting other perspectives. Furthermore, price has, over a variety of studies, been found to be the key to understanding consumer preferences.

The magnitude of disruptive technologies

A stream of authors has critically reviewed Christensen’s definition of disruptive technology. Authors such as (Danneels, 2004; Adner, 2002; Kilkki et al., 2018; Millar et al., 2018; Schuelke-Leech, 2018 and Sood & Tellis, 2017) all found critical points to Christensen’s theory. While some have focused on the disruptor’s dilemma, others like Kilkki et al. (2018) focused on how disruption spreads like rings on water. The dilemma they want to shed light on is how disruption does not only affect the individual, but entire industries and societies. They find evidence through history and develop a framework to assess whether a disruption changes the industry. The framework developed tries to solve and enlighten the reader on how to strategically react to different types of disruptions and understand how disruptive innovation propagates between layers. These layers must be understood as moving from science to society and from another industry to the disruptive industry. The three layers found by Kilkki et al. (2018) have been found through a literature review on the spread of innovation. First, the spread and adoption of innovation among a group in a social system, is found to be correlating to working within one layer at a time (Kilkki et al., 2018). Second, the literature on technology transfer, which Kilkki et al. (2018) finds has implications for policies which promotes innovation transfer from academia to industry (Kilkki et al., 2018). Kilkki et al. (2018) argues that by extending the research streams through a systemic perspective on the spreading of innovation between entire stack of layers and between industries, a simple expressive model assess industry-level disruptions, which will in turn provide an understanding for how it spreads from one industry to another, thereby the society. This is illustrated as a vertical axis as the spread of innovation between all the layers, while the horizontal axis indicates the interactions between industries. Kilkki et al. (2018) argues that the framework is an

instrument to track the paths of the preceding developments and how disruptions interacts with the current disruption.

The authors have, through their framework and theoretical testing, showed that disruption is not a linear process which only affects individuals. Through their case study, Kilkkie et al. (2018) argues that the smartphone industry has disrupted other industries such as the GPS devices and cameras. I find it interesting that Kilkki et al. (2018) looks at disruption as a process of multiple breakthroughs and not just one. Rather, they argue that the development of digital photography not only disrupted the high-end, but also the low-end. This indicates that a vertical spread of digital photography from lower level and upwards happened through numerous developments, like cloud storage, website to store and sharing photographs. Interestingly, Kilkkie et al. (2018) argues that the value of photographs moved from camera and phones to social media, which is further argued to have changed the behaviors of the users. Strikingly, this notion of dividing the level of disruption in to layers has some correlation with Schuelke-Leech (2018) and Millar et al. (2018). However, the focus of these two papers has been on creating a predictive model, which can identify the implications of the disruptive technology on firms, industry and society. Schuelke-Leech (2018) only developed a two-level model, indicating that a first level was on the market/industry, while the second level was a result of clustering of first order localized disruptions. I argue that the two-level model does not account for the consumers interactions with the disruption, rather Schuelke-Leech (2018) are too horizontal and do not account for the vertical layers. Though Schuelke-Leech (2018), do acknowledge that the innovation ecosystem is a non-linear system, it lacks a fundamental part which is the vertical layers.

Kilkki et al. (2018) argues that the framework they have developed is particularly well suited to analyze developments such as the IoT, where several layers from science to society are involved and further these disruptions have an impact over a wide spread of industries. Interestingly, Kilkki et al. (2018) do not indicate which factors these disruptions are driven by. These factors are by Millar et al. (2018) argued to be consisting of five, cost, quality, customers, regulations and resources. I argue that for Kilkki et al. (2018) to comprehensively understand and assess which disruptions will affect both vertical and horizontal, a consideration of which factors drive these disruptions are needed.

I will, in the development of a theoretical framework, incorporate a vertical and horizontal dimension so that a picture of the disruptive ecosystem can be explicated. Though Kilkki et al. (2018) have made an interactive model it lacks an important dimension, which is how to identify whether a technology is disruptive.

The Nation Innovation System

The national system of innovation has been researched for more than 30 years and has now become a wide spread concept used by policy makers and scholars all over the world (B. Å. Lundvall, 2007). Lundvall has long been an advocate for the national system of innovation. He finds that the importance of understanding innovation is a key for progress. Furthermore, he tries to shed light on how and why the concept came about, through the understanding of knowledge and learning as the source for innovation, and lastly, "...how different modes of innovation complement each other and find support in the specific national context" (Lundvall, 2007, p. 95). To thoroughly comprehend the origin of the concept Lundvall draws on Freeman's work to the OECD group. Interestingly, Lundvall has been and still is a key author within the national system of innovation and seen as co-author and main author. He argues that the early stage developments of the NSI concept was not just to develop a new tool for policy makers, but rather a change of economic theory and perspective on economic policy (Lundvall, 2007). Currently, the concept has been acknowledged through an accumulation of empirical studies that innovation is an interactive process, which indicates that there are multiple factors which need to be evaluated. Lundvall (2007) has conducted an extensive literature review on the concept National Innovation and Competence building System. It finds that the interactions between technical innovation on one hand and human resources, organizational change and networking on the other, have huge importance for innovation processes. One striking finding is to what degree innovation can be transformed into economic performances. This means that for a comprehensive understanding of how different kinds of innovation interacts and varies over national contexts, the NICS concept can be applied empirically (Lundvall, 2007). While the NICS concept has been applied in various empirical studies in a developed country context, it falls short when applying it to developing countries. Lundvall argues that the reason for

this is that it does not focus on systems building and capability building. To find support for different kinds of innovations in developing countries, Lundvall argues that alternative indicators which capture the elements of research, innovation and competence need to be developed through testing different concepts and ideas (Lundvall, 2007). Further, it can be hard to understand what goes on in the core of the system, but it is still important to keep the firm in focus, as it can help to understand what works and what does not work in the NICS. An element that Lundvall highlights, is the ability of labor and for the international inward and outward mobility of highly trained workers. This element becomes inherently important as it can bring new technology and ideas into the system (Lundvall, 2007).

For the application of the NICS concept, he argues to use it as a framework for empirical work. Further, the field stands at a crossroad as the current work has been too descriptive. Hence, he suggests two different directions: First, what goes on inside and between firms, in connection with innovation and competence building. The reason for the high importance is that this can indicate that there are international differences, which can be crucial for the way the innovation system works. Furthermore, it can provide indications for which modes of innovation and learning that is most suited. “Without knowledge about the micro-structures we might get little out of attempts to manipulate institutions and organizations at the meso- and macro-level” (Lundvall, 2007, p. 117). The Second direction is to understand the core of innovation systems embeddedness into the institutional set-up, which shapes people and relationships among them.

Lundvall (2007) highlights important discussions on the national system on innovation, such as the origins of the concept, the current state, the future developments and the possible application to developing countries. A positive outcome of this wide application has been that a general shift in what economists and policy makers view as constituting international competitiveness. Such a shift has high importance for a possible adoption of the concept into a developing country. Further, the notion of the move from a linear to interactive thinking of innovation, can contribute to a more holistic understanding of the innovation system. By this I mean that an adoption of Kilkki et al. (2018) could help to understand these interactive processes. Interestingly, Lundvall (2007) has throughout the article tried to identify what a national system of innovation is. He has accomplished this task, but to some extent made the reader more confused on

what specifically national system on innovation is. It is inherently clear that this notion has a high variety of research. To mention some of the most used ones: the capability approach and the systems approach. While the first is often applied in relation to developing countries, the latter has been more widely applied e.g. (Godin, 2015; Guan & Chen, 2012). This wide application has by Miettinen (2002) in Lundvall (2007) been argued that the looseness and openness of the national system on innovation concept have helped in the adoption both in academic and in public policy circles. Interestingly, Lundvall (2007) agrees to some extent with Miettinen on the notion that both the national level and the networks should be studied. The point where Lundvall disagrees with Miettinen is on the concept being too transdiscursive. Here, Lundvall finds that Miettinen overestimates how far social theory can become formal theory.

This leads to a discussion of what then should be part of such an analysis, Godin (2015) finds that the system consists of larger systems such as government, university, industries and their environment. Further, the interactions between the actors is the cause for explaining the performance of innovation systems. Such a definition of the actors which can affect the innovation system, is a good starting point, but it lacks in the sense that it does not suggest how to measure their interactions. This is also a critique made by Lundvall (2007), where he states that further empirical testing is needed, and as found earlier, there are two directions. Other authors who try to overcome the measurement issue are (Guan & Chen, 2012). Their study on measuring efficiency of the NIS was founded on the notion of policies and patents as the dummy variable. They found that the knowledge commercialization process had a higher effect on the overall innovation efficiency of a NIS. Though the model developed have found that the commercialization of an innovation is of high importance for a successful NIS, it is founded on a knowledge-based economy, hence not for a developing country.

Lundvall (2007) has made well founded arguments, which is of high concern when trying to develop a measurement tool for the national system of innovation. The notion that a capability approach could be of better use in a developing country, will not be applied. Lundvall (2007) also supports this through the NICS, which accounts more specifically for the capabilities. I do not agree with Lundvall (2007) on the notion that NICS is not too broad, I find that sine it takes on a holistic approach, it causes it to lose its specificity.

Open Innovation and the fourth industrial revolution

While the notions of innovation have been elaborated on extensively above, it has yet to be debated whether open innovation can generate economic growth. Park (2017) suggests that with the introduction of disruptive technologies in the value chain as we know it will cease to exist, which in turn will have a huge impact on upstream and downstream industries. Furthermore, with the introduction of disruptive technologies a fourth industrial revolution, is to be the solution for the staggering growth rates we see in the world (Park, 2017). Hence, Park (2017) tries to solve the issues by finding what kinds of policies should be developed in order to acquire a competitive edge in the dynamic economy. He argues the solution is open innovation and convergence of new technologies. Open innovation is found to be a driving force which can improve a company's innovation activity performance. Further, it is noted that by continuously generating openness in the acquisition of new knowledge, this can lead to creativity (Park, 2017). Park (2017) finds that for a dynamic economy to emerge in the future, a nation needs to be able to have high adoption levels of both Information and Communications Technology (ICT) and ST (Science and technology). To obtain high adoption levels the government needs to step in and develop policies. Park (2017) suggests the four following parameters. Firstly, a deregulation of new businesses, through the creation of an environment with a free market without artificial restrictions. Secondly, an expansion of new human resources, where expertise of knowledge labor, through the acquisition of the latest information and business knowledge, to improve the value of an organization. Thirdly, a supportive environment, which can enhance the capabilities of the new convergent technologies, to create more efficient new industries. Lastly, it needs to support venture firms, so they can obtain the necessary external knowledge, which can help them grow and develop.

Park (2017) has through the evaluation of open innovation and convergence of new technologies found policies which can lift organizations into the fourth industrial evolution. Throughout the paper Park (2017) has had the opinion that the fourth industrial evolution is happening. I find this viewpoint unfounded as I cannot find any evidence in the paper for this to be a fact. Park (2017) tries to give a comprehensive understanding of open innovation, in terms of its importance for the absorption of external knowledge and for the creation of creativity (Park, 2017). Furthermore, Park (2017) has argued that open

innovation needs to be sustained overtime. To support his argument that the fourth industrial revolution will be a result of a convergence of two different areas leading to the innovation of a new business (Park, 2017). The argument has some reasoning, but it lacks the explanation of how. Chesbrough et al. (2018) has focused on specifically how open innovation create value. Chesbrough et al. (2018) finds that a consideration of the value-in-exchange and value-in-use needs to be understood, before value in open-innovation can be understood. Hence, a development of capabilities which can handle such exchanges needs to be developed, Chesbrough et al. (2018) suggests value provision, value negotiation, value realization and value partake.

Another key argument Park (2017) makes, is the need to set policies which can sustain open innovation and lead the country into the fourth industrial revolution. Further, he argues that in order to be competitive in the fourth industrial revolution, a country needs open innovation in order to succeed. Chesbrough et al. (2018) does agree that open innovation can be a source for competitive advantage but has instead focused on what firms need to do now in order to generate value from open innovation. Chesbrough et al. developed the 4 quadrants on knowledge processes, which could be a useful tool for firms to assess their current position and what needs to be done to generate value from open innovation.

Chesbrough et al. (2018) finds that there is a need to further research the fairness in open innovation. By this, it is meant that if an actor is in an open-innovation project and found that the value realization has been unfair, they might exit the project or completely refrain from entering such projects in the future. This leads back to Park (2017) where policies might be able to create fairness in the environment, hence Chesbrough et al., 2018 can be argued to be a tool for current open innovation, while Park (2017) is for the future of sustaining open innovation and thereby leading to the fourth industrial revolution.

I find it interesting that Park (2017) has argued for a convergence of new technologies for countries to keep being competitive in the future. Further, the notion that the fourth industrial revolution is based on this convergence is to some extent farfetched - other factors such as reverse innovation, incremental innovation and radical innovation should be part of the evaluation. Lastly, the policies suggested are somewhat generic and has not considered the different regimes. In conclusion, the article has some interesting

point on how disruptive innovation will lead us into the fourth industrial revolution and good starting points for further research.

Regulatory compliance and disruptive innovation, through big data collaborations

In today's society data sharing amongst firms has become an essential part of an organizations resource. After the implementation of the General Data Protection Regulation (GDPR), firms needs to be able to navigate the tension between control and innovation in big data collaborations (van den Broek & van Veenstra, 2018). This tension is a focus of van den Broek & van Veenstra (2018)'s study. Hence, in a study on "...the interaction of coercive institutional pressure from regulation and data characteristics to explain how IOS (*Inter-organizational Systems*) governance is arranged", they suggest to solve the tension between control and innovation in big data collaborations (van den Broek & van Veenstra, 2018, p. 331). They do this through four archetypical inter-organizational governance arrangements, also called data collaborations. Network governance relies on social contracts, where the identity of the members are known and previous experience is needed to build trust in the collaboration van den Broek & van Veenstra (2018). Hierarchy governance is characterized by a formal structure where higher ranked members has power over the lower ranked members (van den Broek & van Veenstra, 2018). Bazaar governance arrangements are characterized by, a community of actors that arbitrarily collaborate on a common goal (van den Broek & van Veenstra, 2018). Market governance provides high level of autonomy to the members of the network. Their reasoning for this distinction is based on four features of data collection; control over the data, coordination mechanisms, characteristics of data sharing and inter-organizational data sharing (van den Broek & van Veenstra, 2018). Within these four archetypes the characteristic of the data sharing, the main coordination mode and the degree of control each member have of the data, needs to be evaluated to understand the tensions mentioned earlier. Interestingly, they find that data collaborations where personal data is involved needs to apply a hierarchical governance, subsequently the organization needs to retain control over the data, to comply with GDPR. Subsequently, they find that the type of data has a high influence on which governance arrangement is

best suited. Hence, "...more decentralized approaches for open data and centralized approaches for sensitive data" (van den Broek & van Veenstra, 2018, p. 337).

Van den Broek & van Veenstra (2018) argues big data technologies are disruptive, due to the fact that big data like disruptive technologies also makes, established technologies outdated and reduces the value of investments in legacy technologies. They reason this fact on the basis that big data improves operational efficiency and the effectiveness of firms, thereby leading to new services, products and business models (van den Broek & van Veenstra, 2018). Hence when they use big data in the paper, it is a disruptive technology. Arguably this has implications both analytically and practically. Firstly, the origin of big data is a cumulation of huge amounts of data points, which we as humans now have the capabilities to utilize to create technological innovations. Secondly, big data is a resource which everyone, if they want, can accumulate and generate value from. This is in line with (Günther et al., 2017) where the problem formulation is on realizing value from big data. Another argument which van den Broek & van Veenstra (2018) uses is that an emerging technology can lower the entry barriers for entrance firms. They argue that datafication of markets can lower the costs to store, process and analyze the huge amount of data available, resulting in low entry barriers. Datafication is the process which data goes through for data to generate value. Hence, big data and datafication are two different things. This implies that van den Broek & van Veenstra (2018) might not have full control on what big data's characteristics are and what characterizes a disruptive technology.

The overall result from van den Broek & van Veenstra (2018) is that depending on the data, the governance structure needs to follow it. Hence, open data requires decentralization, while sensitive data requires centralization. This leads to the literature on open innovation, where scholars try to find the best ways to manage open innovation and to capture value from it (Chesbrough et al., 2018; Park, 2017). van den Broek & van Veenstra (2018) might benefit from drawing on open innovation literature to get a better understanding of the mechanisms and consideration needed in open innovation. These mechanisms and considerations should include fairness in open innovation, because the convergence of new technologies and policies to provide a more secure environment for firms to operate in.

This article has provided some interesting insights into the notion of big data as a disruptor. I do not agree with the findings of van den Broek & van Veenstra (2018). I believe this will become obvious in my theoretical framework. The article's notion of different governance structures depending on the kind of data shared needs to be further developed, so it also considers the context it is embedded in.

Innovation in developing countries

I have throughout the literature review had a focus on disruption and innovation. These articles have somewhat lacked a developing country perspective. Hence, this part of the literature review will lead more up to the later development of my theoretical framework. For decades, disruptions have been found to spawn in the developed world, while developing countries lack behind. This is a focus of (Hang, et al., 2010) where they focus on the untapped needs of the developing countries and their potential to develop disruptive innovations. They take up four cases which highlights ways to profit by being alert to the constraints, consumer needs and transforming these into disruptive products. The author argues that for firms in general to become successful with revers disruption they will need to leverage their disruptive products in new markets. Firstly, by giving attention to the tacit needs of local customers or potential customers. Secondly, to understand and develop the potential of a product is key component of a disruptive innovation strategy (Hang et al., 2010). Thirdly, the key factor to solving the problem of developing disruptive innovations in developing countries are the price point, where the entry price needs to be low in order to create a mass market (Hang et al., 2010). In other words, companies must be highly aware of the consumer context and adapt these cues into “job-to-be-done” product objectives (Hang et al., 2010). Fourthly, the development of local capabilities, will enhance their success rate. Hence, Hang et al. (2010) argues that foreign companies should partner up with local firms or these local centers should at least have some autonomy from the main office, to develop new capabilities suited for the local context. Fifthly, in-house Research & Development (R&D) capabilities developed for the local context is critical to develop disruptive innovations in such contexts. Furthermore, to sustain a successful initial, firms must be aware of the low entry barriers these markets have.

The cases have shown how “...disruptive products designed to leverage the resource-constrained emerging market can enter – and disrupt – the global market” (Hang et al., 2010 p. 22). In conclusion they found that reverse innovation in developing countries can develop into disruptive innovation, through a disruptive innovation strategy, which takes the above arguments into consideration in the development of the strategy.

It is well known that products which is stripped off all unnecessary features, is a disruptive innovation. With such a strategy to reach resource-constrained consumers. Hang et al. (2010) defines disruptive innovation as often being inferior to established technologies, as they have characteristics of being smaller or have more features. The features of these products are not inferior in the sense that they are of lower cost, small size or simpler to use. The argument here is that disruption can also occur in developing countries. In the article, reverse innovation is also applied to this phenomenon. I therefore assume that reverse innovation in developing countries can become disruptive. The disruptive innovation strategy found by Hang et al. (2010), is further developed in (Govindarajan and Ramamurti, 2011). They also identify what features the product should have, sturdiness, portability and price (Govindarajan and Ramamurti, 2011). The context which companies operate within, is a key factor for success (Govindarajan, 2011; Hang et al., 2010). Interestingly, Hang et al. (2010) only analyses the diffusion of disruption in the developing world, while Govindarajan (2011) argues for further study in the diffusion of the now disruptive innovation to developed countries.

When Hang et al. (2010) argue that the local subsidiary needs autonomy to develop local capabilities, a solution would be to develop a new business model for the local context. Casadesus-Masanell & Tarziján (2012) find that more than one business model offers unique sustainable benefits, but one must be able to handle the risks and capture the benefits of combining two complementary models, while keeping the competing model separate. For such a development and taking Hang et al. (2010) into account, entry of a multinational firm in a developing country with the purpose of adopting a disruptive innovation strategy; should make the subsidiary have autonomy over their business model, while keeping the central values in focus, to yield the highest value (Govindarajan, 2011).

For the purpose of my study, I find disruptive innovation strategy to have many potential analytical applications. Hang et al. (2010) has accomplished to make well founded arguments based on four case studies. To make the suggested framework a generalizable framework, more applications needs to be made over a larger variety of developing countries. Though this is not the purpose of the article, rather it was to find insights into what a strategy should contain. I find that a combination of Govindarajan (2011)'s multiple business models can help foreign firms to not compare the two products results. Further, by reversing Govindarajan (2011)'s findings to a developing country firm and drawing on Hang et al. (2010)'s understanding that these firms develop economies of scale at home and then take it abroad. I argue that developing country firms need to have one business model for the home market and one for developed countries, while keeping the critical assets shared, and share capabilities and resources in a combination, to yield highest value.

The middle-income trap

For years, scholars have tried to predict and understand the circumstances of when fast growing economies slow down, and the characteristics and circumstances of when this slowdown occurs. These issues (Eichengreen, 2012) tries to answer in relation to China, for three reasons. Firstly, China accounts for a considerable part of world population, secondly, increasingly seen as a key engine of growth for the world economy, thirdly, policy makers are hesitant with how to sustain growth in the medium to long run. It is especially what happens before a fast growing economy's slowdowns, that Eichengreen (2012) tries to answer. In other words; the factors which play a role in the evaluation of their slowdown and the implications this has on China.

The study is focused on quantitative measures with a combination of qualitative support. It first establishes three conditions which need to be satisfied within the rate of GDP growth (Eichengreen, 2012). The first condition entails that a 7-year average growth rate of per capita GDP is at least 3.5 percent or greater before the slowdown. The second condition recognizes a "...growth slowdown with a decline in the 7-year average growth rate of per capital GDP by at least by 2 percentage points" (Eichengreen, 2012, p. 46). The third condition "...limits slowdowns to cases in which per capita GDP is greater than

US\$ 10,000...” (Eichengreen, 2012, p. 46). To assess a slowdown in a country’s economic growth, the authors apply different modeling tools; one is the frequency of actual growth slowdown per capita income. To assess where over a period a slowdown occurs. Next, they argue that an application of a standard growth-accounting framework, where capital input, labor input, human capital and technical change, which can account for the bulk of the slowdown. Lastly, they apply a probit model to determine the determinants of growth slowdowns. Here, they look at fertility and ratio of per capita income. Through the application of the models developed, the authors argue that China in 2023 (2021, depending on U.S. growth rate) will reach 58 percent of U.S. per capita income, which is the threshold for fast-growing catch-up economies slow down.

It is found through their calculations that a slowdown of the Chinese economy is not too far into the future. The fact that China is an energy intensive economy, has a high age dependency ratio and the share of employment in manufacturing is 23 percent, gives backing for an approaching economic slowdown. Furthermore, their forecasting of growth has been found to be solid, due to others having found the same outcome.

(Eichengreen, 2012) has through a quantitative study with qualitative backing analyzed economic slowdowns and the reasons for such slowdowns. Though the word middle-income trap has not been mentioned once in this article, the research is a frontrunner for understanding what goes before a middle-income trap.

Eichengreen (2012) argues that the slowdowns can intuitively be argued to coincide with “...the growth process where it is no longer possible to boost productivity by shifting additional workers from agriculture to industry and where the gains from importing foreign technology diminish (Eichengreen, 2012, p. 54). Furthermore, “...the sharpness and extent of the fall in Total Factor Productivity (TFP) growth from unusually high levels of 3-plus percent to near zero is striking” (Eichengreen, 2012, p. 54). It is found that the indicators for a looming economic slowdown is intertwined with labor and technological development. The latter part is by (Cai, 2012), found to be an important determinant to overcome such an economic growth slowdown. He finds that the equilibrium between of the middle-income trap can be overcome through a revolutionary technological and institutional breakthrough. Furthermore, in Cai (2012) the fact that China’s age dependency ratio is increasing, is also an indicator for an approaching

middle-income trap. Cai (2012) goes further and suggests China to upgrade the patterns of economic growth.

It is therefore suggested that a shift from agriculture to non-agriculture sectors is needed, and where the economy is driven by improvements in the TFP and labor productivity. Lastly, Cai (2012) finds that when a long-term growth is built on innovation, it will become sustainable. Following Eichengreen (2012) the improvement in TFP is a determining factor for preventing an economic slowdown.

With the key argument that a high TFP (technological development) and sustained long-term innovation is a key factor for China to overcome an economic slowdown/middle-income trap, Eichengreen (2012) highlights the need for understanding disruptive technologies effect on economic growth. I find the measurements (Eichengreen, 2012) applies well founded and useful tools to comprehend what goes on before an economic slowdown occurs. Lastly, I find that further research on the interaction between economic slowdown and NIS is important. This is by Cai (2012) found to have profound importance for China to cope with the challenges of a middle-income trap. Three key factors are identified, a reform and transformation of government functions, the accumulate human capital through education and training, and maintain TFP growth. The latter has been given highest importance. Hence, in the development of the theoretical framework disruptive technologies will be given high importance for China to overcome an approaching middle-income trap.

Developing the theoretical framework

This part of the paper will focus on the interactions between the different literature streams, which will end out in a theoretical framework. The focus will be to make a structure of the literature that can provide insight into how China can avoid a continuous economic slowdown leading to a possible middle-income trap. Firstly, the NICS literature will provide a scaffold for the intuitional background and measures which need to be evaluated. Secondly, the critiques of the NICS being too loose, will be accounted for through the application of the horizontal and vertical model (Kilkki et al., 2018) has developed. Thirdly, the section will also offer limitations to the study, as the focus will be on the disruptive power of disruptive technologies. Fourthly, reverse innovation which

becomes disruptive will be applied, hence the suggestion (Hang et al., 2010) made for firms will be used. Fifthly, measures which can evaluate these three structures will be identified.

Lundvall (2007) has found a plausible definition of NICS's, the notion that interactions within the system are the once generating technical innovation. While the measures found by Lundvall (2007) are debatable depending on the nation state being analyzed, some institutions can be drawn out and applied in the theoretical framework. These are the mobility of labor, which can bring in new technologies and capabilities. I will also look to other scholars for measures which brings the firm to the center of the analysis. Kilkkie et al. (2018) finds that the inactions between firms provide a structure which puts the firm in the center. Where Kilkkie et al. (2018) looks at disruption in the value chain, Lundvall (2007) looks at innovation within a nation. I will in the theoretical framework apply disruption and not innovation. Furthermore, the vertical and horizontal dimension is applied, for an interactive approach to disruption and its effects on the system. This is also in line with the findings from Godin (2015). While the system he describes is too broad, the notion of interactions between actors, is the key to explaining the system. Hence, interactions will be a key factor for the theoretical framework. With such an approach the issue of finding appropriate measures for such interactions needs to be overcome and the issue of becoming too broad. Hence, reverse innovation from Hang et al. (2010) together with (Park, 2017; van den Broek & van Veenstra, 2018) will provide for a more specific understanding of disruption in an open innovation system in a developing country. Thereby, the measures needed have been narrowed down to how the firm interact in the system. This can help to understand how disruption move around in China's innovation system.

As mentioned above, I will limit the study to disruptive technologies in open innovation systems in China. Through Maclaurin, it was found that invention is measured through patents of either basic and improvement, while innovation is measured through new and old companies' access to capital and new plant constructions. Lastly, the ability to accept innovation is measured within a cultural group. Maclaurin's (1953) measures have, as argued earlier, some hold but are also of older date. The notion of measuring the acceptance of innovation within a cultural group has been evaluated by Adner (2002) where consumer preferences on price was the key factor for adoption of new technologies.

While this measure is important for the study, I will also evaluate the firm's capabilities to generate disruptive technologies, sustain them and adopt them into society. Hence, Teece's (1986) complementary assets, Christensen et al.'s (2001) creative destruction and van den Broek & van Veenstra's (2018) four types of data collaboration. For a more comprehensive understanding of the societal needs and adoption rate, Park's (2017) ICT and S&T policies together with Eichengreen's (2012) accumulated human capital and TFP.

For the theoretical framework not to seem like a shopping cart, I will now argue for the interconnection of the model. As Lundvall (2007) argues an analysis of the national innovation capability system, the firms need to be kept at the center, and there is a need to develop new measures for capability evaluation in a developing country. Hence an analysis will start from the understanding of the national system setup, from there a case will be applied to illustrate a firm's capabilities to function within and deliver disruptive technologies into the system. This is also the approach Christensen (2006) has applied to theory building: First, I need to identify possible categories then test them and verify them. This needs to be done until no anomaly is found. Hence, the analysis will be a test to see which of the categories/measures are most relevant to the understanding of disruptions interaction and effects on the Chinese economy.

Research Methods

In this section a systematic approach to find, collect, analyze and interpret the research will be discussed and presented. It will serve to validate my findings through the application of The research 'onion' (Saunders et al., 2012, p. 128). Firstly, the research philosophy will serve as a discussion on the assumptions ontological and epistemological researchers make, on the reality of nature and the best way to investigate the natural or social world. Secondly, the research approach will be discussed in terms of theory building hence I will draw on (Christensen, 2006). He has developed and clearly delineated the structure of how a paper should develop for a theory build process. Furthermore, I will for more scientific based researcher apply (Saunders et al., 2012). Thirdly, the research design will consist of the methodological choice, strategy and time horizon. Fourthly, I will look to Yin (1994) for judging the quality of the research design.

Below is the Research Onion, which has helped in the structure and overall knowledge of the research method.

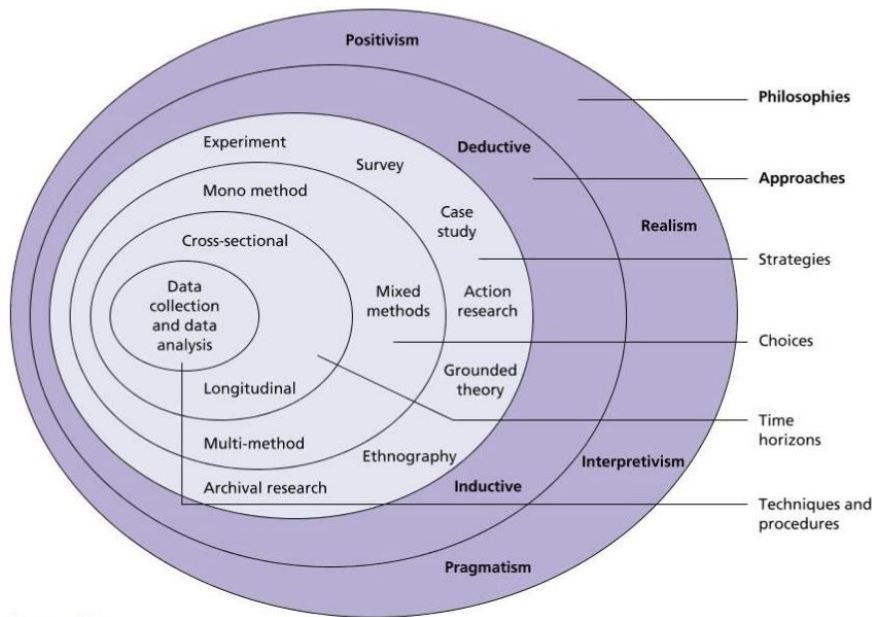


Figure 1: (Saunders et al., 2012, p. 125)

Research Philosophy

This section will discuss the overarching term related to the development of knowledge and the nature of that knowledge (Saunders et al., 2012). It will highlight my assumptions about the way I view my research in connection to the research question. Furthermore, research philosophy provides a frame to understand the “taken-for-granted assumptions that we will have about the way the world works” (Saunders et al., 2012, p. 129). It is found that Ontology is concerned with the nature of reality, while epistemology is concerned with “...what constitutes acceptable knowledge in a field of study” (Saunders et al., 2012, p. 132). Axiology is on the other hand concerned with the judgement about values. In Saunders et al. (2012) it is argued that being clear on your own values can help to provide appropriate ethics.

As the research conducted in this paper is on the study of a phenomenon, the middle-income trap, and the fact that a I will develop theoretical assumptions. I will apply critical realism to help inform the study. I will reflect upon the chosen philosophical choice and defend the choice in relation to alternatives. In Saunders et al. (2012) critical

realism is to be understood as an epistemological position, which relates to scientific investigation. Interestingly, Saunders et al. (2012) does not argue that critical realism can have an ontological underpinning. Easton (2009) on the other hand finds that “Critical realism assumes a transcendental realist ontology, an eclectic realist/interpretivist epistemology and a generally emancipatory axiology” (Easton, 2010, p. 119), in other words, critical realism can have different philosophical positions, depending on the take you take towards the development of knowledge and the nature of that knowledge. The reasoning for a critical realist knowledge development is founded on the basis that it “...acknowledges the world and entities that constitute reality actually exist “out there,” independent of human knowledge or our ability to perceive them” (Wynn & Williams, 2012, p. 790). In other words, reality exist objectively or subjectively relative to humans, as in the ontological position. It can therefore be argued that critical realism is a context depend philosophy, where knowledge is theory-dependent, but not theory-determinant. In contrast, epistemology position constitutes acceptable knowledge in a field of study, by specifying the source, characteristics and assessments of truth claims (Saunders et al., 2012). In conclusion, Bhaskar (1998) in Wynn & Williams (2012) sums up the description of critical realism as “ontologically bold but epistemologically cautious” (Wynn & Williams, 2012, p. 789). This provides for a more holistic approach to improve theorizing and identify the mechanisms which connect chains of indeterminate events and complex interactions (Wynn & Williams, 2012). On this point Saunders et al. (2012) argues that critical realism is especially well suited for business and management research, as this field often tries to understand the reasonings for a phenomena as a way to recommend change (Saunders et al., 2012). Though I have made arguments in support of critical realism, other philosophical positions could have been considered. Positivism is one of these as it has similarities such as the assumption of a scientific approach to the development of knowledge (Saunders et al., 2012). Direct realism also has similarities to critical realism but differs in the sense that the world is relatively unchanging and only operates at one level. While critical realism recognises the importance of multiple levels, which would generate a more holistic understanding of the context the phenomenon is in. I therefore decide to have a critical realist approach to the study.

Research approach

In this section I will look at the form of reasoning which will guide the design of research. The three forms are deduction, induction and abduction. While Saunders et al. (2012) explains these in-terms of applicability to a business context, Christensen (2006) looks at the three in-terms of theory building. Figure 1, adopted from (Christensen, 2006), highlights not only the reasonings undertaken when developing a theory from inductive to deductive, it also indicates a design research for such an undertaking.

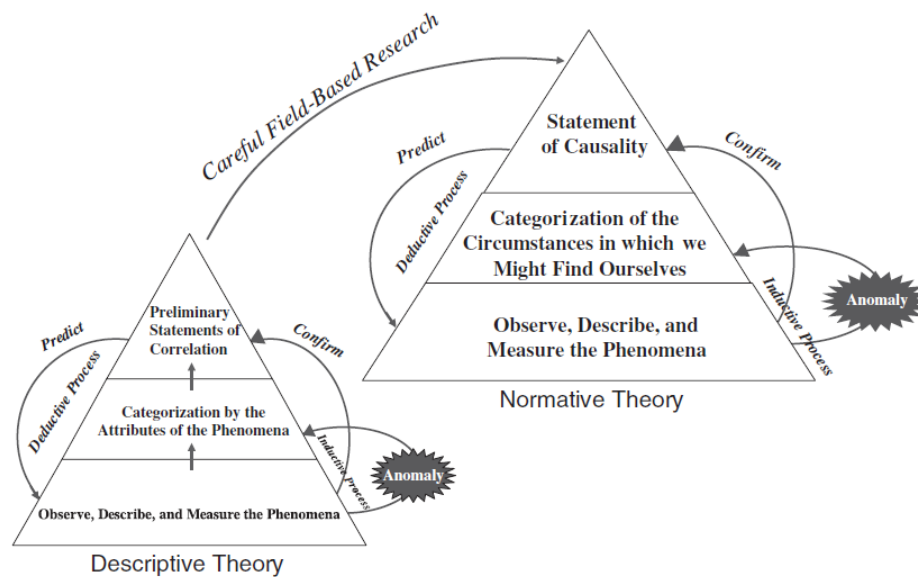


Figure 2: (Christensen, 2006, p. 43)

As argued earlier the purpose of this paper is to comprehensively understand the phenomenon of the middle-income trap through disruption. To comprehensively understand this, I have developed a theoretical framework which needs to be tested through a case study. Hence, I will first have an inductive reasoning to develop the model, this is a process of three steps observation, categorization and association. Ending in a model, which then needs to be tested on new hypotheses (Christensen, 2006). It is tested by exploring the same correlations and attributes found to have significance (Christensen, 2006). This approach to theory building will be further unfolded in the rest of the research method chapter, here I will specifically consider time horizon, accessibility, resources available. This will all be in correlation to case study design.

Research design

I will in this section make the general plan for how I will go about answering my research question. Furthermore, clear objectives from the research question will be derived, which will help to specify the source of data, collection and analyses the data, discuss ethical issues and constraints of the research (Saunders et al., 2012).

Methodological choice

This study will purely be based on a qualitative methodology, this choice will have implications for the philosophical assumption, research approaches and strategies. Saunders et al. (2012) calls this a qualitative research design. Qualitative research will be used first inductively to study the phenomenon's meaning and the relationship it has to the context. Next it will have a deductive reasoning as the developed model will be re-tested on new data sets.

Nature of the research design

While the nature of the study to some extent already has been decided through the research question, I will elaborate on the implications for the research this has, through exploratory, descriptive or explanatory study. These three are not exclusive towards one another they can be combined; this is especially true with descriptive studies. It is important to note that the descriptive theory in Figure 1 is not of the nature as research design, it is to gain a comprehensive and holistic understanding of the phenomenon. Though characteristics such as understanding the whole picture is the same, descriptive theory goes further in the sense that a model is developed. I will in the study first have a descriptive approach to lay the basis for the model generation and testing. I will combine descriptive studies with explanatory studies, to address the phenomenon, so as to explain the relationships between variables (Saunders et al., 2012).

Research strategies

This part will inform the reader of the strategy which will achieve the goal to find out whether disruption is the determining factor for overcoming the middle-income trap. It will serve as the methodological link between philosophy and methods to collect and analyse data (Saunders et al., 2012). As part of my consideration for which kind of strategy to apply I consider my choice of philosophy, research approach and methodological choice. I decide to conduct a case study. Yin (1994) one of the most cited

scholars on case studies, has five points which defines a case study design. First, define the boundaries of the case study, selecting a topic for a case study, the questions need to clarify the boundaries, while upholding to a relevant time frame. Second, define the unit of analysis. He suggests the reader to answer the following questions “What is the main unit of analysis in this book? What alternatives did you consider, and why did you select the unit that you did?” (Yin, 1994, p. 52). Third, define a case study research design, he suggests to answer the following questions. “How did it justify the relevant evidence to be sought, given the basic research questions to be answered? What methods were used to draw conclusions, based on the evidence? Is the design a single- or multiple-case design? Is it holistic or does it have embedded units of analysis?” (Yin, 1994, pp. 52–53). Fourth, Establish the rationale for single- and multiple-case studies, and answer: What are the advantages with the different types of design? Fifth, Define the criteria for judging the quality of research designs, here is mentioned construct validity, internal validity, external validity and reliability (Yin, 1994). These questions provide a structure to the reasoning for a case study and to understand once case study design. Though some have been answered earlier in the methodology, I will still answer those lacking an answer.

I will draw on Flyvbjerg (2006) for critique of a case study design. First, the boundaries of the case have already been defined as the phenomenon the middle-income trap. My research question entails that the study needs to be of the current situation and predict what might happen in the future. Second, the unit of the analysis will be Alibaba’s usage/mentioning/application of disruption, hence it is not the whole organization being studied but their usage of disruption. My reasoning for selecting Alibaba, is that they are a digital company, with a forward-looking mindset, hence having a higher possibility of generating disruptions. Furthermore, Alibaba is one of China’s biggest companies, especially within e-commerce, which has been argued to be a main contributor to the fourth industrial revolution. I did not seriously look to other companies, as I have a good general understanding of the Chinese market pre-research. Third, the methods used in the research design has already been evaluated. The design has been chosen to be a single-case design, mainly due to time restraints. The Design will have an embedded analysis in the sense that I will only look at what Alibaba themselves in public have stated as disruption and look at their developments within disruption, hence holistic in the sense that it is not a specific unit to be analyzed. Fourth, the advantage of applying a single-

case study is that I will be able to understand the phenomenon studied from the perspective of Alibaba's influence in-depth, while a breath of the phenomenon will generate more superficial results (Flyvbjerg, 2006). While a critical point is that a single-case study cannot become generalizable, this has important connotations to Christensen 2006 theory building. As it states that to move from descriptive theory to normative theory, "all" anomaly needs to be evaluated and accounted for. This also means that to generate generalizations based on a single-case study, will not be possible, only a descriptive theory will be possible. From a critical realist perspective generalizability comes "...from identifying the deep processes at work under contingent conditions via particular mechanisms" (Easton, 2010, p. 126). In the end Easton (2010) explains that generalization can be obtained in case studies, through a mixture of general and specific, hence the task of case studies is to uncover the structure of the underlying reality. With this in-mind I will apply a single case to obtain deep understanding of the phenomenon. I have not answered to the fifth question Yin (1994) made, this will be elaborated on later in the research design.

Time Horizon

The time horizon of the study is longitudinal in character, as I study the phenomenon of middle-income trap, which is a re-occurring phenomenon, which has been studied in-depth, hence these datasets can be reanalyzed in relation to my research question (Saunders et al., 2012).

Data collection

The primary source of data is found in the literature review, which applies secondary sources such as journals and books. The collection of these have been done through an extensive search on multiple databases. As the research is a case study, I will look to conference proceedings and company reports. Lastly, tertiary sources will be used to support arguments and findings in the analysis.

Criteria for judging the quality of the research designs

This section is crucial, as it makes sure that I am upholding to my methodological choices. Yin (1994) has identified four tactics on how to test this. He argues to not only apply these in the beginning but also during the research. The four suggested tests are construct validity, internal validity, external validity and reliability. Where construct validity is a

test to establish correct operational measures for the phenomenon, it is applied in the data collection phase and has in my study been constructed in the literature review. Internal validity is a test which looks at the establishment of casual relationship, where certain conditions are found to lead to other conditions. The test occurs in the data analysis, where pattern-matching, explanation-building and time series analysis is applied. I will in this study apply the test of pattern-matching and explanation-building, this will become evident in the analysis, but also in the theoretical framework. The external validity, which is constructed in the research design, is to establish a domain to which the study's findings can be generalized. This point will be harder to establish with a single-case study, as generalizability often occurs through multiple-case studies. Lastly, the reliability of the study, will be evident in the data collection phase and in the reference list. As I have only collected data available to the public, the reliability of the study will be higher than for example external validity (Yin, 1994).

Operationalizing the research method - Alibaba Group

In this section I will introduce the case company, which will operationalize the method and be the test subject of my theoretical framework. I will shortly outline the Alibaba group, through their values, businesses, culture and values. This will help to understand my reasoning for choosing the Alibaba group and give a more in-depth understanding of how and why Alibaba can be an important test subject for the phenomenon. Alibaba group was founded in 1999 by Jack Ma, the vision in 1999 was to enable small enterprises through the internet, to leverage innovation and technology, so as to compete more effectively (Alibaba Group, 2019). Today the "...mission is to make it easy to do business anywhere" (Alibaba Group, 2019). While the vision is to become a company that will last for at least 102 years. They want their customers to meet, work and live on the Alibaba platform

The culture and values Alibaba want to protect can be seen through their emphasis on enabling small business to prosper. This is clear by looking at the rapid growth and the spirit of entrepreneurship, innovation and a need to meet the needs of consumers. At Alibaba they believe that even though they have grown to become one of the largest companies in China, it will still be able to maintain their shared values, to maintain a common culture and community (Alibaba Group, 2019).

The Alibaba group wants to help businesses transform their marketing, selling points, operations and improve efficiencies. Alibaba provides these four points through technological infrastructure, where the reach to consumers becomes smaller (Alibaba Group, 2019). All of these are provided through Alibaba Group's core competences within; commerce, cloud computing, financials, digital media and entertainment (Alibaba Group, 2019). They have nine different platforms, Taobao.com, TMALL, AliExpress, Alibaba.com, 1688.com, alimama, Alibaba Cloud, Cai Niao and Ant Financial. They will all be operationalized in the analysis, though Ant Financials will be given a higher focus, due to the disruptive characteristics it has on the banking industry and payment industry (Alibaba Group, 2019).

I have through a search on Alibaba group webpage searched disrupt, where it materializes in 15 different articles on their webpage. It is mentioned as the future and is on several occasions correlated with a collaboration between Alibaba and a research group often at universities. Interestingly, Alibaba have in their annual report in the US, accounted for how they could be disrupted in several areas (Alibaba Group Holding Limited, 2017). For Alibaba disruption is not a dangerous word, even if they now are as Christensen categorizes at the end of their development, they manage to keep on creating new markets. This is enabled through several initiatives; collaborations, acquisitions, research centers, donations and so on. Hence, are Alibaba the new champion in creative destruction. Below are some points found in their annual report in the US, which Alibaba is accounting for:

- Lack of qualified labor; hence education is a key in their annual report
- Institutional change, hence, measures to quickly overcome them have been put in place.
- Looked at the future and are trying to not be overtaken by a disruptor, but rather cooperate with them on the development – open innovation

I will in the analysis apply Alibaba in the vertical part of the analysis. This will show how the descriptive theory build process is applied.

Analysis

In this Chapter I will apply the theoretical framework to the case company Alibaba. The structure will follow the theoretical framework in an interactive approach to the case firm. As the analysis is set in the Chinese society, and since the governance style is considerably different from what the NICS earlier has been applied to. In the horizontal analysis, I decide to first delineate the Chinese nation state. It will help to understand why the context is as it is and why companies operating within it like they do. Then I will apply Lundvall et al. (2002) to indicate the transitions the Chinese innovation system have been through, here will be applied measures found in the literature review will be applied. Furthermore, I will give the Chinese government a key focus, where the policies will lead the analysis. Lastly, a short snapshot of the Chinese consumers and the e-commerce industry is analyzed in accordance with the measures found in the literature review. The vertical analysis will take departure in the interactions between the firm and Government, consumer and industry. It will illustrate the importance of understanding the whole ecosystem and how these actors interact and affects each other.

Horizontal - Analysis

The Chinese nation-state – the Chinese political environment defined

To understand the Chinese state, I will go back to the beginning of 1949 where CPC came to power. Though CPC is a political party, it is not up for election like in a democratic nation-state. As Witt and Redding (2014) states, the ultimate political power rests with the CPC, which entails that the government structure mirrors that of the CPC, hence CPC and state can be viewed as interchangeable words. I will therefore in this paper view CPC, state and China as the same definition as Witt and Redding (2014). For the CPC to maintain power, they need to concern themselves with the maintenance of its popularity in the public (Witt & Redding, 2014). Therefore, CPC needs to maintain a stable political environment and prosperity for the country at all cost. China is hence defined as a “...developmental state with distinct predatory admixtures” (Witt & Redding, 2014, p. 12). Interestingly, Witt and Redding (2014) bases this definition on the notion that CPC desires to stay in power and the goal is to restore China to its former glory. Especially the last part, has in later years been a focus of political propaganda, where Xi Jinping have

been quoted in this (Peters, 2017). The Chinese state has since 1978, developed economic reforms to make this goal come true.

The predatory elements are seen in the high levels of corruption within the party, which has in the later years been a focus point of the Xi government (Peters, 2017). It can be argued that the public over the years has been feed up with corrupt politicians, hence Xi had to do something about it. This is only one of many speculations. It is important to understand when, where and how the CPC intervenes in the “market”, as it can provide answers for companies on how to strategically go about these changes. To comprehensively understand the Chinese Business System, Witt & Redding (2014) suggest seven systems which need to be understood in order to make a status quo of the Chinese business system. I will here make a note that in the NICS literature the context is important, but the firm needs to be kept in focus. I argue that due to the characteristics of the Chinese State, a higher focus and understanding needs to be put into the context. Hence, I will use the next section to outline these seven interconnected systems.

Financial System: The financial system is heavily affected by State Owned Enterprises (SOE) banks, though since 2014 the first Private Owned Bank was be established by the Alibaba Group (Ant Financial, 2019). This is of high interest for the analysis, firstly the case company is Alibaba Group. Secondly, it has earlier been well-known that policy makers favored State Owned banks, as they could have higher control of the system. Thirdly, POEs have had limited access to official bank loans, as the banks tends to favor SOEs (Witt & Redding, 2014).

Ownership and Corporate Governance: In domestic China, Chinese firms can be divided into three categories: Private, state owned and hybrid (Witt & Redding, 2014). Private firms are often family businesses or partnerships and in 2017 accounted for 89.5 percent of the total corporate entities in China (National Bureau of China, 2018). Firms owned by the state can come in different forms. The SOEs, which often in the industries are categorized as important for China’s development and security. Though the Chinese state has over the years loosened its grip on the these SOEs it still retains direct or indirect controlling stake (Witt & Redding, 2014). Another category which is also under government control is the collective enterprises, which are normally controlled at a lower level of government (Witt & Redding, 2014). The hybrid firm is defined as

“...local corporates, a term suggesting a local branch of state administration in alliance with indigenous entrepreneurs and possibly foreign investors, who may bring in technology and international market access” (Witt & Redding, 2014, p. 16). These companies are often hard to know whether they are accounted as SOEs or POEs in statistics, but nevertheless, they have high importance for the possible transfer of new knowledge into the system. Lastly, foreign private companies operating in China has a high importance for knowledge transfer. Furthermore, they will often have to adapt to environment, not for capital support, but for political support. Overall, the firm structure environment is rigged with corruption, friend favors and favoritism of SOEs.

Internal Structure of the Firm: It is found that decision making is at the top of the pyramid. The key organizational norms are discipline, control and paternalism, where managers are hesitant to delegate work. This entails a silo structure, with top-down control. It can be argued that filial piety is also found in Chinese companies and promotions is rather based on trust and relations. Reasons for this not to change is the lack of enforcement of the law and norms. The consequences are that the fostering of organizational competences, where it requires widespread creative or complex coordination, will be hard and most likely the companies will fail (Witt & Redding, 2014).

Employment Relations: At a first glance the structure of the labor unions and employer unions in China, has the same structure as in a European-style social democracy (Witt & Redding, 2014). Taking a closer look, it becomes clear that this is not the case. As mentioned earlier, the CPC wants to have complete control over all activities in the country. This also entails the assembly of people. Hence, the labor union leader is a member of the CPC and has a senior position in the government. Further, the trade union and confederation are also controlled by the CPC. Lastly, the members of the party have a personal stake in the POEs (Witt & Redding, 2014). This is a huge conflict of interests as the government wants their profits to increase. Hence, workers’ rights are often neglected (Witt & Redding, 2014).

Education and Skills Formation: This system is one of the more important for the future development of China, as it gives a good indication for what the future workforces’ skillset will be. Witt & Redding (2014) has found that the Chinese educational system is relatively weak. They find that the literacy rate is relatively high,

but the enrollment in upper secondary² and tertiary³ level is relatively low. Furthermore, there is a shortage of technical employees, it is argued that many see this as manual labor and perceive this as a less prestigious education. Put differently, the system favors general skills over vocational training (Witt & Redding, 2014). Another argument for why vocational skills is less prioritized, is that the alignment between employer needs and the education is insufficient (Witt & Redding, 2014). A solution to such a misalignment could be for companies to provide in-house training, However, due to the high turnover and skilled labor is in high demand, companies have a hard time keeping their employees (Witt & Redding, 2014).

Inter-Company Relations: In the form of Joint Ventures (JV) between local firms and foreign firms, transfer of technology occurs. In the west these are often of a voluntary kind, but in China, these are a way for foreign firms to get access to the Chinese market. This has changed since 2001, where China entered the World Trade Organization (WTO). The trend these days is now for foreign firms is to enter as a wholly foreign-owned enterprise. Amongst Chinese firms, there are between few to no alliances, as the property protection enforcement is weak, and labor can move freely, taking their knowledge with them.

Social Capital: in China the interpersonal ties are based on Confucianism's filial piety, where close family and friends enjoy higher trust and closeness. This is known as Guanxi. This is important for the understanding of how people interacts with each other and ultimately do business. Chinese institutional trust can be evaluated based on Edelman's trust barometer. Edelman's trust barometer finds that general trust in China is 74 points out of 100, while the U.S. has a general distrust of 43 points (Edelman, 2019). I have used U.S. as a comparison, as this might generate a better understanding of China's trust levels. Analysis the trust barometer further it is reported that, China has higher trust levels in informed public, employer, government and media than in the U.S. (Edelman, 2019). This indicates that trust is by the recipients viewed as high. By looking at some of the questions asked, e.g. on government interference, Chinese would say yes to the need for government to intervene and make change happen. While the American government

² Is equal to the Danish Gymnasium

³ Is equal to the Danish University

scored relatively low. The low score could be due to a higher reliance on the capital market. I argue that this report can provide information on the trust levels and give indications for the government's influence in the system.

From the above analysis of the Chinese business system, it is clear that; China is a developmental state with distinct predatory admixtures, as that top down control of the state is in every aspect of the system. Furthermore, the interpersonal ties have clear historical lineage from Confucianism. I will not explain the Chinese nation-state in the later sections, I will assume that, when CPC, state or government is mentioned, that the reader is aware of working of the society.

Government - The transition of the Chinese NICS

The Chinese business system has immense impact on how the innovation system will or can develop. I have divided the next section into three parts to indicate China's three stages of innovation. I will highlight important interactions within these three stages. The last stage will be different as I will focus on Chinese policies conducive for innovation. The government layer will be rounded off with a brief sub conclusion on the findings.

Stage 1: Planned economy (1949-1980)

During the time of planned economy, the Chinese government had a clear-cut understanding of how they wanted to control the innovation system. The system was characterized by a linear model of innovation, where Government research institutes (GRIs) was a key player in all innovation activities. This completely contradicts what many NIS scholars has found, that for creativity to flourish, disruption needs to be given a non-linear environment to operate within. Further, in-house R&D schemes in industrial enterprises where non-existing. Some SOEs had their own in-house R&D schemes, but only in the sense that focus was on experimental issues. It is therefore evidently that China's innovation system was a linear and hierarchical model.

In this period, S&T was the key to overcome shortages of goods and services, and to further strengthen the military. These plans focused on the development of capabilities within atomic energy, electronic semiconductors, automation, computer technology and rocket technology (Lundvall et al., 2009). Some of the achievements from this system was large scale projects, developing nuclear bombs and artificial insulin (Parayil & D'Costa, 2009). Furthermore, China imported many technologies from foreign

countries in order to assimilate the technology, by making incremental innovations through reverse engineering. I argue that the Chinese government has made it impossible for the adoption of S&T into the industry, hence being a hem shoe for an efficient innovation system. Furthermore, as this study focuses on open-innovation, I argue that by having the government in control of the system, there are no room for creative thinking.

China managed to discover these huge developments, though the system was lacking in the sense that priority was on output, not on quality and inputs. By applying reverse innovation and accounting for consumer preferences, the products were developed for the market correctly, but was not disruptive. For reverse engineering to become disruptive the firms needed to take the product abroad and disrupt the market there on price. Such a development would at the time not be possible due to the policies of the CPC.

Another issue was, and still is the enforcement of intellectual property rights (IPR), which does not encourage innovation. Drawing on Maclaurin (1953) and Teece (1986) it is clear that even in an open-innovation system, IPR is needed in order to create incentives for innovation, and thereby hopefully also disruption. Though if we follow the notion of invention → innovation → disruption, multiple versions of an innovation need to emerge before a dominant design can be decided upon, thereafter disruption can occur. This would have been an interesting development if it had succeeded.

Overall assessment of the Chinese innovation system is that there are important institutions lacking enforcement, the market is too regulated and access to finances are near impossible for POEs. Lastly, a high dependency on foreign technologies and a low absorptive capacity, resulted in low innovative developments.

Stage 2: Catching up (1980-2006)

I will in this section apply the structure from Lundvall et al. (2009), which will provide a holistic understanding but also an easier structure for the reader.

The role of enterprises: Since 1980s, the privatization of SOEs and new waves of competition has provided for strong incentives to invest in R&D (Parayil & D'Costa, 2009). Though there has been an increase in R&D expenditure and technology import, China still lagged behind developed countries. In 1995 the expenditure on R&D's

share of total sales was 0.46 percent, while in 2005 it had increased to 0.76 percent (Parayil & D'Costa, 2009). What is important for disruption is that there is enough capabilities and creative thinking in the system. But as argued earlier even though, China imported foreign technology, their absorptive capacity is still lacking. Only a few firms have been able to facilitate incremental innovation in the sense of reverse engineering. These are Haier, Lenovo and Huawei.

The Chinese system is rigged with patents, though the system is different from the international standard. It is divided into three levels: 'Invention' refers to a more R&D intensive patent, the 'utility' model refers to a functionality modification or improvement, and 'design' refers to new appearance (Parayil & D'Costa, 2009). In line with incremental innovation and radical innovation, it is found that Chinese firm's applications for patents have increased more in the utility model and design patent. Invention patents have increased since 2000, but foreign firms have been found to be the main reason.

Role of FDI: In this period, the emergence of Multinational Corporations (MNCs) increased. The shares of value added and exports from the MNCs in China have been steadily increasing to a relatively high level. Interestingly, the shares of R&D expenditure and employment was still of a relatively low level when compared to value added and exports. This indicates that MNCs in China are of a capital-intensive character, with little R&D-intensive manufacturing (Lundvall et al., 2009). Furthermore, it indicates that technology transfer is low, which is of high importance for the development of innovation capabilities and ultimately disruption. Though it is found that the inward-Foreign Direct Investment (FDI) have proven to help developments in sectors such as the automobile and technology-intensive industries. This has proven to propel the Chinese ICT sector into the one of the most "...internationalized high-tech industries in which value-added, technology imports, and exports are dominated by FDI firms" (Lundvall et al., 2009, p. 127). I find it interesting that it is Foreign direct investments that has developed such an important sector, because it is now categorized as a primary industry by the CPC. It again confirms that China lacks the absorptive capabilities to convert these technologies into disruptive technologies.

Role of government research institutes (GRIs): This institution has in this period undergone drastic structural changes, which has proven to better accommodate innovation in the system. As of 2000, enterprises accounted for more than 60 percent of total R&D, indicating that the innovation system of China has gone from a linear and hierarchical model to a more holistic non-linear model, where all factors of the market can support innovation (Lundvall et al., 2009). Though R&D has increased, cutting-edge science and technologies are still developed by GRIs and universities. One reason for this could be that the public money assigned to R&D goes to public research institutes and universities. Though I would argue that if it is the public's money, then they shouldn't fund Alibaba's private research institute. Hence, I argue that the criteria, rather should depend on whether the funding can benefit the society.

Lundvall et al. (2009) argues that the government relies on the GRI and universities to realize the S&T ambitions. Through the years the GRI has changes and are now what I would categorize as a slimmer version of its former dominance. It went from approximately 6000 institutes with 1.000.000 employees, to less than 4000 institutes and around 560.000 employees in 2004 (Lundvall et al., 2009). It is found that the GRIs that are left, often runs more smoothly, while some have failed. Lundvall et al. (2009) argues that scientists aren't managers. I find this interesting, as it indicates that a combination of a R&D and S&T community with business managers could be the ultimate solution to realize the Chinese government's goal for S&T.

Role of government: During this period, the Chinese government introduced a new institution called the technology market, the purpose was to facilitate transactions between suppliers and users of technology, at the time of Lundvall et al. (2009) this institution was the most important way for such transactions. The special economic zones in China have also been an important factor for China's development of high-tech. As of 2009, there were 53 national high-tech zones. The reasoning for these zones was that they would provide the proper infrastructure, which could serve for innovation and interactions among universities, research institutes and firms. These zones in 2009 accounted for 90 percent of high-tech firms and incubators. Interestingly, most of these are signoffs from the GRIs universities, new private firms and FDI firms. Furthermore, it is found that by 2004 the total added value from these zones accounted for 8.8 percent of GDP and exports

accounted for 12 percent of national value. In sum, these special economic zones have been good business for the Chinese government.

It is argued by Lundvall et al. (2009) that the most important policy tool implemented in this time period is the specific national S&T programs, where it is highlighted the national high-tech program, whose purpose was to catch up.

Linkages between universities, GRIs and industries: This part of the analysis is important in the sense that Lundvall (2007) and Kilkki et al. (2018) argued for an analysis of the interconnectedness and relations between the players in the system. It is found that due to the changes made by the government, the higher competition/ the possibility for to operate in a competitive environment, has made an incentive for the Universities and GRIs to collaborate with the market. It is found that in 2004, 31.3 percent of universities' funds for S&T came from enterprises (Lundvall et al., 2009). Another form of linkage is joint publications. Here, the linkage between industry and universities are of a relatively low submission rate compared to the submissions from individuals and private research institutes. However, co-authoring within S&T between engineers and researchers from industrial enterprises has been increasing. The third suggested linkage is venture capital, where this form of cash flow only has been increasing since the 1990s. They have gone from being purely government driven to now having private and international Venture Capital (VC) firms invest in universities and GRIs in China (Lundvall et al., 2009). This does not entail more or easier access to capital for start-ups, rather than the VC firms lack of a proper intuitional setup.

Stage 3: Building domestic innovation capabilities (2006-present)

In 2006 the Chinese government released a 15-year plan for the development of science and technology (GOV.cn, 2006). The plan is called “National programming 2006-2020 for the Development of Science & Technology in Medium to long-term” (The State Council, 2006). Over the years the Chinese government has developed 5-year plans, 10-year plans and 50-year plans. These plans can be viewed as the blueprint that will be enacted by the government in the future. Hence, these plans become an important part of the analysis. They highlight key areas for developing a conducive environment for disruptive technologies. Since the 15-year plan was made in 2006 and was to be implemented over the next 15 years, I should be able to find evidence for whether it has

been successful or not. Furthermore, I will draw on my theoretical framework findings on policies conducive for disruption, firm specific assets, and reverse innovation. I will therefore in the following part, evaluate not only the “National Programming 2006-2020 for the Development of Science & Technology in Medium to Long-term”, I will also evaluate the eleventh to the thirteenth 5-year plans. As argued earlier, due the governance structure of the CPC, the universities and SOEs are to a large extent controlled by the CPC. Hence, in the analysis of the horizontal environment government will have a large influence on both universities and SOEs. I argue that through this analysis a holistic understanding of the horizontal environment Alibaba operates within has been analyzed and understood.

National Programming 2006-2020 for the Development of Science & Technology in Medium to Long-term: The overall goal is to make China an innovative country through the implementation of domestic policies, where 60 percent of China’s development needs to come from S&T, and the dependency on foreign technology needs to decline to 30 percent. Lastly, the amount patents given to Chinese nationals needs to be amongst the first five in the world (The State Council, 2006). In order to achieve this, three key changes and goals have been highlighted. One, by 2020 R&D investments need to have increased to 2.5 percent of GDP (The State Council, 2006). Two, the fiscal policies will be changed to stimulate innovation at company level. Hence, a 150 percent tax deduction for innovative companies, or in other words, classified as a subsidiary scheme. Furthermore, an acceleration of depreciation for R&D equipment for up to 300.000 RMB (The State Council, 2006). Three, a scheme favoring innovative companies, where public procurement by government agencies need to patronize these companies even if their quality and efficiency is lower than non-innovating Chinese firms and foreign firms (The State Council, 2006).

Park (2017) has argued for the need to have high adoption levels of both ICT and S&T, which should be developed through policy changes. By looking at the above and the plan for developing S&T, it is clear that China understands the importance of ICT and S&T. As the focus of the study is on open innovation, high absorption of external knowledge and creation of creativity is needed. I argue that the notion of the dependency ratio to drop, provides evidence for a development for higher adoption of own ICT and S&T into industry. I argue that specific policies have been setup. Firstly,

CPC has developed a policy set-up conducive for ICT and S&T to thrive. Secondly, a 150 percent tax deduction, generates incentives for companies to invest more new technologies, which can render them innovative. Thirdly, favoritism has earlier been a key for success in the Chinese business system. Here, I refer to SOEs ease of access to capital and government subsidiaries. I will in the end of the horizontal analysis state whether the numbers set by the CPC have been reached, which will lead us to the vertical analysis.

Eleventh 5-year plan (2006-2010): This plan was developed and processed by the Chinese government in late 2005 and accepted in the beginning of 2006. The main features of this 5 year-plan - in correlation with the theoretical framework - was to change the current market into a market economy. This means that the economic decisions, pricing of goods and services are guided not by the government, but by the aggregate interactions of consumers and businesses. With the decision to change the planned economy, the Chinese started multiple reforms and restructuring processes, which were initiated during the opening of the Chinese market in the 1980s. On this note, I find it interesting that the government will support and promote independent innovation capabilities, so a market-oriented and enterprise-led innovation can blossom. Hence, a restructuring of the current system is needed.

The eleventh 5-year plan focuses on changing the current system. It focuses on changing the issues left over from the planned economy, to speed up the process of transitioning to a market economy (Gov.cn, 2006). Thus, limiting the government's interference with the system, turning the SOEs into profit-maximizing firms. Further, it included the removal of policies which discriminate against private firms and opening up monopolistic sectors to private. Lastly, a restructuring of the financial sector, so all firms as access to capital (Gov.cn, 2006). If the Chinese state upholds to this, it can provide important developments for an open-innovation environment.

Twelfth 5-year plan (2011-2015): This plan was developed and processed by the Chinese government in late 2010 and accepted in the beginning of 2011. The main features of this 5 year-plan in correlation to the theoretical framework was to rebalance the economy, so a shift from investments towards consumption and development of the urban and coastal areas to rural areas and inland. The target for GDP growth per capita is

7 percentage annually, spend 2.2 percent of GDP on R&D efforts by 2015, a general readjustment of inequality, an intensification of anti-corruption schemes (The State Council of People's Republic of China, 2006). Further, in relation to the development of innovation, the IT industry have now been categorized as a strategic emerging sector (The State Council of People's Republic of China, 2006). CPC will focus on the development of new-generation mobile communication, new-generation internet, Internet of Things, cloud computing and so on. The government will invest in these emerging strategic industries and encourage financial institutions to strengthen credit support for these industries. Lastly, change the taxation so it supports investment and consumption (The State Council of People's Republic of China, 2006).

Thirteenth 5-year plan (2016-2020): This plan was developed and processed by the Chinese government in late 2015 and accepted in the beginning of 2016. The main features of this 5 year-plan in correlation to the theoretical framework, was a clear understanding that the Chinese economy is on the right track, but it is going too slow to rectify the faults (Central Committee of the Communist Party of China, 2016). It is interesting that an innovation driven development has become part of the main agenda and is seen as the solution to most of the country's issues. Importantly, in order to establish the innovation driven economy, certain aspects of the Chinese business system need to change. These changes described in the thirteenth 5-year plan are largely what has already been put forward in earlier five-year plans. I therefore decide not to elaborate further into these points. I will apply key numbers on the progress of the plan and conclude on whether the policies applied have influenced the numbers.

Here, I will shortly outline whether the key goals of the National Programming 2006-2020 for the Development of Science & Technology in Medium to Long-term and the three 5-year plans, have been successful. I will apply numbers found in the China Statistical Yearbook. On the notion that China was to increase expenditures on R&D to 2.5 % of GDP in 2020, I have found that in 2017 this amounted to 2.13%. It is important to note that in 2005 the number was 1.33 % of GDP (National Bureau of China, 2018). Furthermore, in 2005 the growth rate of GDP was 11.396 %, while in 2017 it was 6.9 % (The World Bank, 2019). China still hasn't reached the goal of 2.5 % of GDP expenditures on R&D, but are not far from the goal.

The goal of maximizing profits in SOEs has developed impressively from 2005 to 2017. In 2005, the average profit per unit was 23.7 million yuan, which in 2017 increased to 90.5 million yuan (National Bureau of China, 2018). This needs to be seen in the light that SOEs per unit and the amount of employed in SOEs has decreased (National Bureau of China, 2018).

The CPC stated that they wanted to have a dependency ratio of 30% on foreign technology. I argue that the total value of imports on high-tech products can be seen as a numerical factor for this. It is found in China Statistical Yearbook 2018 that in 2005, the imports on high-tech was 30%, while in 2017 it has increased to 33% (National Bureau of China, 2018). I can conclude that they managed to keep the increase of high-tech at the same percentage point.

Many scholars have argued that patents are an indicator for innovative activities. The Chinese government also finds this measure important for the development of innovative activities. The three forms of patents mentioned earlier have all been increasing in number of patents granted; Inventions from 53,305 in 2005 increased to 420,144 in 2017, utility models increased from 79,349 in 2005 to 973,294 in 2017, and Designs from 81,349 in 2005 to 442,996 in 2017 (National Bureau of China, 2018).

Consumers – current in China

It has been clear in the last three 5-year plans that consumer's purchasing power was a key for economic development. What has been even more clear in the last two 5-year plans, is that the inequality between coastal and urban citizens versus inland citizens has become an important factor for the economic growth of China. In numbers, online retail sales growth rate in 2017 is 32.2%, while consumer price indices were 101.6 yuan per basket. I will in the vertical analysis later, indicate the linkages between consumers and Alibaba's introduction of their bank.

Industry: e-commerce

The main market for Alibaba is their platforms, which makes it possible for the buyer and the seller to interact. Alibaba has various platforms, and all have different characteristics. I therefore categorize Alibaba as an e-commerce platform company, which service is acting as the middleman. The e-commerce market in China is now the largest in the world

(Statistica, 2019). It is characterized by an increasing gross merchandise volume which in 2018 totaled 28,1 trillion yuan and had a projection of 32,7 trillion yuan (Statistica, 2019). Further, the number of employees in the e-commerce segment, where the direct employees have been steady with no significant increase, while the number of indirect employees has increased at a steady pace from 14,000,000 in 2012 to 25,000,000 in 2017 (Statistica, 2019).

Last key figures for evaluating whether the Chinese state has reached their goal is the number of listed companies, which totaled 48 in 2018 (Statistica, 2019). The number of listed companies indicates that new forms of capital has been access. These numbers clearly indicate a steady growth of the industry and it does not seem to slow down. A factor is that more and more Chinese get access to the internet and their purchasing power are rising. This can be an indication of a low entry barrier, which is one reason for the attraction of many new entrances.

If we follow Christensen's theory of the innovator's dilemma, there will at one point emerge a dominant design, which will overtake the market. Are we seeing the end of this? I would argue not, due to the increase in online consumers. I will in the next section elaborate on how Alibaba has managed to generate creative destruction, new needs and how they have tapped into unexplored needs.

Vertical

I will divide the vertical analysis into three parts: Alibaba's interactions with the government, then with consumers and then with the e-commerce industry. I have collected data from Alibaba's own webpage, where I have searched in-depth for disruption. I found 15 appearances in company documents, most of which are statements of collaborations with other companies and establishments of research centers with universities. As I have earlier argued, the universities are under government control, and I will assume that this is an interaction with the government. Furthermore, I will search the web for Alibaba's direct interactions with the Chinese state.

Alibaba's interaction with the government

I will first look at Alibaba's interaction with the Chinese government. I believe it will shed light on how the Chinese government still has control over POEs even though they are not owned by the state. I will not be able to make this analysis without mentioning the Social Credit System (SCS), which is a system that has been (and still is) in the process of being developed by CPC. It evaluates the Chinese citizens on their behavior. I will not go into depth in regard to its functions or the many ethical discussions this raises. What I will look at, where the CPC gets its data from and if this can potentially change Alibaba's disruptive nature. This can indicate a close link between Alibaba and CPC.

In 2015, Alibaba launched Ant Financials. It originates from Alipay, founded in 2004 (Alibaba Group, 2019). The mission is to bring the world equal opportunities. This is done through an open, shared credit system and financial services platforms and technological innovations within the financial sector (Alibaba Group, 2019). Though the goal was to bring lending opportunities to all people, the system had big flaws in the interpretation of the data's meaning. Some experts have voiced their critique on the issue of gathering data from one source and using it to something completely different (Yang, 2018). Even an employee at Ant Financial stated that the difference between big data and strong data is profound, as big data can sometimes not provide the best data for predicting behavior (Yang, 2018). Furthermore, this employee also said that "...the best predictor of whether someone will default on a loan in the future is often their previous loan payments history..." (Yang, 2018). What is interesting is that the Sesam credit score which every user is given, has never been used for giving out loans. Rather, it has been re-adjusted to fit market needs, so it now offers credit ratings services for other fintech companies (Yang, 2018). The Chinese state intervened by cracking down on the high-interest lenders, which was a large pool of Ant Financials clients (Yang, 2018). Ant Financials had to re-adjust their focus again and are focusing on helping third-party companies, who needs help with predicting whether users will uphold to their contracts. In exchange, these companies provide access to their data (Yang, 2018). It is clear that the first version of Sesam credit score had its flaws and has yet to be fully developed. The second version of how to use Sesam credit score was stopped by the Chinese State. The third version has provided new use cases and could potentially change the way companies make deals and who they interact with. Given this development, it is

clear that the technology of a credit score system is something which might take hold and potentially change the way business interacts with business. Lastly, it could also provide more trust in a society where guanxi generates trust.

The above has shown how the Chinese state can interrupt a potential disruptive technology, and indirectly generate a need for changing the business model, like in the case with Ant Financials and the value it brings to the society.

There has for some years been speculations on whether Jack Ma is a member of the CPC. These speculations were put to rest in a press release from the state-run media People's Daily, stated that the CPC would honor 100 people for their contributions to China's development (Perper, 2018). Jack Ma was described as a CPC member and has been a driving force for the increase in domestic demand (Perper, 2018). This announcement was not a big surprise, but rather a confirmation of Jack Ma's ties to the government. The importance of Jack Ma's membership is two-folded: Firstly, the government can provide the business with benefits otherwise not possible, and secondly, the party gets access the and better control of the company. For these reasons Jack Ma's political engagement in the CPC is important for understanding the interactions between Alibaba and the CPC. Interestingly, these interactions are not clear in the policies on national innovation system. They are rather creating an environment conducive for innovation, not only for Alibaba, but other companies and industries too.

Universities and GRIs have a huge part in the development of skilled people, and the development of groundbreaking knowledge. Alibaba has for years been aware of the shortage of skilled labor in China and has tried to collaborate on several occasions with these faculties. On October 11, 2017, Alibaba announced the launch of an innovative global research program which purpose is to develop breakthroughs amid at improving lives through technology. These research centers will open up domestically in Beijing and Hangzhou, while it will open up globally in San Mateo, Bellevue, Moscow, Tel Aviv and Singapore (Alibaba Group, 2017). The plans for the Academy are to develop its own AI inference chip, where it will potentially be applied in autonomous driving, smart cities and smart logistics (Alibaba Group, 2017). On February 28, 2018 Alibaba announced a joint research institute with Nanyang Technological University in Singapore (Alibaba Group & NTU, 2018). This is the first research institute outside of China and

has high importance for the attraction of skilled labor to the Alibaba group and potentially China. The institute will focus on AI technology in areas such as health, aging, homes and communities. Alibaba will provide testable data to the institute and knowledgeable researchers (Alibaba Group & NTU, 2018). On April 3, 2018, Alibaba announced a joint lab focusing on natural human-computer interaction with Tsinghua University (Alibaba Group, 2018). The focus will be on both fundamental and disruptive research, which means multi-source emotion data analysis, affective computing, tangible interaction and multimodal perception and interaction (Alibaba Group, 2018). The expectations are that the technology can be applied to new retail, autonomous driving and smart living (Alibaba Group, 2018). All these initiatives have a clear tendency, they all focus new technologies, which can help Alibaba in their business. This comes as no surprise; businesses are businesses and they need to see a possible ROI. More importantly, they get access to a talent mass which might have been harder to access before, and they get to shape them after Alibaba's requirements.

Alibaba's interaction with the consumers

The product that Alibaba sells to consumers are platforms where they can interact with sellers and buyers. It is therefore technology as a service. What is important for an individual consumer on the platforms can be very different, due to the fact that Alibaba has state a monthly active users of over 699 million active users each month (Mozur, 2019). I will shortly outline the various platforms Alibaba group are in charge of to indicate their many customers. First, Taobao.com is a platform for C2C and the most installed shopping app in China (CIW Team, 2019). Second, Tmall is China's largest B2C platform, with a focus on branded products. Furthermore, you can establish online stores in the platform, which can be compared to a real shopping center (Alibaba Group, 2019). Third, AliExpress is the western version of Taobao and is a B2C platform, where most of the manufacturers and distributors are from China. Fourth, many have heard of Alibaba group, but not so much on Alibaba.com, which is a wholesale marketplace for global trade. There are buyers from over 190 different countries, which consist of wholesalers, retailers, trade agents, manufacturers and SMEs. The purpose of the platform is import and export, services such as supply chain management of trade financing, and logistics and customs clearance (Alibaba Group, 2019). Fifth, 1688.com connects wholesale buyers and sellers in China, in the apparel, home decoration, furnishing materials,

electronics, shoes, packaging materials, food & beverages and others (Alibaba Group, 2019). Sixth, Alimama is a technology platform which provides service to match marketing demands of merchants and brands applying all data sources available for the Alibaba group and third-party properties. Seventh, Alibaba Cloud is a provider of IaaS (Infrastructure as a Service) and has been named top three in its class. The service was founded in 2009 and is used by start-ups, corporations and government organizations. An interesting point is that Alibaba Cloud is the official Cloud Service Partner of the International Olympic Committee. Eight, the Cainiao network is part of the vision to fulfill consumer orders within 24 hours in China and 72 hours for the rest of the world. It utilizes the capacities and capabilities of logistics partners. It offers domestic and international one-stop-shop logistics services and supply chain management solutions. Ninth, Ant Financials, which has earlier been described and applied, is Alibaba's new big adventure. It operates on an open platform strategy, where existing financial institutions can leverage on its technology (CBInsights, 2018). Furthermore, the revenue stream has been changed to focus prioritizing the tech services it provides to companies (CBInsights, 2018).

The Alibaba group thus has nine different complimentary platforms, which creates an eco-system for the whole Alibaba Group and consumer. It is clear that with all of these platforms Alibaba group has a large pool of customers, for which price is hard to define. As stated in the literature review Adner (2002) found that the factor which determines whether consumers choice can be disruptive is their decreasing marginal utility from performance improvements beyond the requirements. Viewed in this light, Alibaba needs to know whether consumers marginal utility would increase by adding one more platform to the eco-system. Though Adner (2002) focused on price as a determinant, I will argue that this is not the case for Alibaba, rather it is whether the market has become saturated with different options. I could here draw on the literature stream from two-sided platforms where the key factors to keeping consumers on the platform is lock-in effect, too high switching cost and high volumes of vendors, which taps into the consumers' needs.

Factors which should be considered in the Chinese context is whether the content taps into the needs of their Chinese consumers. Here I will draw on Govindarajan (2011) as it highlights the difference between disruptions in developed economies and

developing economies. The features a product in a developing country should have are sturdiness, portability and price. Furthermore, Hang et al. (2010) argues that factors to consider are: tacit needs of local consumers, understanding and develop potentially new product, solving a problem, entry price needs to be low to create mass market and develop local capabilities. I argue that since the analysis only looks at Alibaba in China and as Alibaba is a Chinese company, the strategy suggested by Hang et al. (2010) is not suitable to evaluate Alibaba. While Govindarajan (2011) has the viewpoint from a developing country firm, it is a physical product he evaluates not a platform as a service. In conclusion the Govindarajan (2011) and Hang et al. (2010) are dismissed on the basis that they evaluate physical products and not an online technology, which does not have a physical form.

Alibaba's interaction with the e-commerce industry

I will first define the industry Alibaba operates within as the e-commerce industry. The main reason being that all their operations are online and in platforms which mitigate interactions between buyer and seller. I will only focus on the Chinese e-commerce market and when comparisons can provide for a more holistic understanding of the industry, I will draw on this information.

The Chinese e-commerce industry has over the last decade seen an enormous growth. The reason is that Chinese consumers got access to the internet, and statistics show that "...online shoppers in China increased from around 46 million in 2007 to over 533 million in 2017..." (Statista, 2018). Statista contributes this to the fact that the number of e-commerce platforms and apps has been growing. Furthermore, their accessibility, extremely user-friendly digital payments and convenience are also attributes which have contributed to the increase (Statista, 2018). Though in 2018 the steady growth that the e-commerce providers have been used to declined (Griggs & Pedersen, 2019). This is seen in the light that the Chinese economy has slowed down over the last years and a trade war last year with the United States. The Chinese e-commerce industry still has room to grow as some of China's population are still missing access to the internet. An important fact which needs to go into the evaluation of the industry is China's increasing age dependency ratio and a falling birth rate (The World Bank, 2017). Older

people use the internet less, and with a declining population the number of people that access the platforms are decreasing. It is thus even more important to not bet on one horse only. Alibaba has through their data sharing between platforms had an open approach.

Alibaba has through Ant Financials adopted a form of open innovation. On Ant Financials Alibaba collects data on their consumers. This data is collected from all their platforms and can be shared with other platforms in the Alibaba group, business partners, marketing and advertising platforms (Google, Facebook, Twitter and Instagram) (Alibaba.com, 2019). Furthermore, Alibaba states that they use the data for the improvement of the consumer experience, which is based on the browsing records and order history. Data can also be used for other purposes, such as for scientific research purposes (Alibaba.com, 2019). While the form of data sharing which has been indicated above is a form of market governance as described by van den Broek & van Veenstra (2018). This form of decentralized approach to the data is by Park (2017) argued to contribute to generate openness in the acquisition of new knowledge. This also has implications for the absorption of external knowledge and the creation of creativity (Park, 2017).

Alibaba has through the years made several investments, but in relation to disruption, they invested an additional 1 billion dollars in Aliyun, their cloud-based solution (Aliyun.com, 2015). Another form of interaction Alibaba has entered is with Fung Retailing, where their goal is to bring more global brands, as demand is increasing from Chinese consumers (Fung Retailing & Alibaba Group, 2018). Lastly, Alibaba Cloud (Aliyun) partnered with HTC. This partnership will focus on developing breakthrough innovation solutions to solve the issues of data transmission, data processing and bandwidth allocation, for the use in VR video and VR broadcasting (HTC & Cloud, 2016). All these examples are cases of Alibaba interacting and reacting with their surroundings. As Chesbrough (2018) argues that for open innovation to be sustained the company needs to understand the value in exchange and use.

Overall the vertical analysis has showed how Alibaba has interactions with all three actors in the eco-system. Furthermore, I argue that Alibaba has driven the development of the e-commerce industry in China. My reasoning is that Alibaba has partnered up or used the capabilities of their platform to create new development. These

developments have been within AI, cloud solutions and data transformed into disruptive usage. I will in the next Chapter discuss my findings and answer my research question based on the findings in the analysis.

Discussion

This chapter will focus on giving a holistic understanding of the paper, where the research question will be answered. It will be divided into five parts, each focusing on giving a deeper understanding of not only the paper, but also how it centers itself within the different literature streams and industry. Lastly, this chapter will extend the research into what comes next.

Summary of Key Findings

The motivation for conducting the research has been to find out whether disruption could be the determining factor for overcoming the middle-income trap in China. Therefore, aim has been to develop a descriptive theory of disruption in the NICS literature, so it with time could be applied to contexts other than China. The scope has been illustrated through my theoretical framework of interactions between government, industry, consumer and the disruptive firm. Furthermore, the scope was delineated in the research method chapter where Christensen's theory building model was adopted.

The paper has been based on the ideas from eight scholars - each with different perspectives which have applied in the paper. They can be divided into Innovation as the concept, disruption of incumbent firms, disruption in a holistic understanding, national innovation system and innovation in the middle-income trap.

Key results were the development of the theoretical framework, were the interactions between the different literature streams has been found. Kilkkie et al. (2018) and Lundvall (2018) have provided the structure, which implies a horizontal and vertical approach to the NICS framework. Through Christensen et al. (2010) and Park (2017) I found that the incumbent firms can sustain their position if they master creative destruction. This can be achieved by applying open innovation and converging two new technologies, which would disrupt the current market. Furthermore, an important key result was that the literature needed to be placed within the intuitional context. These key

results were only possible through an evaluation of the eight key authors' own measures, which were debated upon in the literature review.

Discussion of Results

I have earlier in the discussion summarized my findings in relation to the key authors. I will in the next paragraphs relate and discuss with my research question in mind the outcomes of the paper to the current academic understandings. My aim is to inform and build on current knowledge, through an interactive "conversation" with the scholars found in the literature review.

My research question was "How can Alibaba Group's disruption impact the Chinese society towards a more sustainable economic growth?". It was analyzed through a comprehensive evaluation of Alibaba's interactions with the Chinese society. The reasoning for such a focus is found in Lundvall (2007), where he argues the for the application of the NICS in a developing country the focus needs to be kept on the firm. I argue that this assessment is correct, but in a country like China, where the government has high presence in all aspects of the society, an analysis needs to account for this. It is important to note that I still argue for a focus on the firm, the main reason being that in the Chinese society institutional voids will be common, hence the firm will have to navigate this context. Lundvall (2007) argues that new measures needs to be developed in order to properly asses innovation in a developing country context, where it needs to capture new elements of innovation, research and competencies. I find that these measures which needs to capture the elements suggested by Lundvall (2007) has high importance and needs to be evaluated further. Therefore, I have looked to scholars like (Christensen et al., 2001; Hang et al., 2010; Maclaurin, 1953; Park, 2017; van den Broek & van Veenstra, 2018), whom have all suggested measures fitting Lundvall's. I will shortly delineate how these scholars' work all have measures applied in the analysis and why some have been found to be ungrounded for. The relevance for the research is the aim of determining whether disruptive technologies can have transformative power in the Chinese society and whether this can contribute to a more sustainable economic growth.

Christensen et al. (2010) finds that incumbent firms need to be more aware of entrance firms and their ability to possibly disrupt the market. He therefore suggests

the adoption of a creative destruction strategy. I agree with Christensen et al.' (2010), in that incumbent firms need to be more observant and should not rest on their laurels. Whoever, he argues that creative destruction will often elude central planning, and in a context where central planning is the core of society, this might be hard to establish. I argue that Christensen et al. (2001) lack the understanding of the societal context and are blinded by own opinions on how a society should be structured. My reasoning stems from the many critiques of the disruption theory where context is absent. Christensen et al (2010) is biased in as the scholars are western scholar with the perspective of western countries. I do agree with the notion that creative destruction can be beneficial for economic growth, but I also see a need to develop new ways to implement a creative destruction environment in China. Looking towards my analysis, Alibaba has begun to cracked the code, but is also seeing the Chinese state beginning to intervene in their operations.

While Christensen et al. (2001) found that creative destruction could help a country grow economically, Hang et al. (2010) suggest multiple business models. Even though Hang et al. (2010) analyses developed countries firms' ability to implement their product in a developing country, I argue by reversing this, it can also be applied for a developing country firm. I have through the adoption of Alibaba in the analysis, specifically their many different platforms, highlighted how Alibaba has accomplished this. I find evidence in the operations of the platforms. Alibaba keeps critical assets shared amongst the platforms, sharing capabilities and resources in the form of data, it results in higher value for Alibaba and the customers. I therefore argue that reversing the multiple business model is not exclusive to developed country firms. In relation to my research aim of determining disruption's impact on the Chinese society, I argue that Hang et al. (2010), could be a solution for incumbent firms to re-invent themselves without disrupting their own business.

Even though, Maclaurin' (1953) article is of older date, the argument that patents are a measure of the ability to invent and can lead to the acceptance of innovation, still holds today. It is found in my analysis that one of the Chinese goals for developing an innovative society is to grant more patents. Looking at the development of the patents granted in correlation to China's economic growth, patents have increased exponentially.

I agree with Maclaurin's assessment that patents can be a measure of innovation even in developing countries.

I agree with Park (2017), in that convergence of new technologies in open innovation can sustain innovation and lead an economy into the fourth industrial revolution. The reasoning behind this being that Alibaba has taken their data and deployed it in various contexts, such as in the financial industry and AI research for breakthrough disruptions. These various ways of using their data for other purposes, have the potential to generate completely new market and demands. Furthermore, Park (2017) argues that for these developments to be sustained and occur more widespread in an economy, high adoption rates of ICT and S&T has to be developed by the government. Therefore, four parameters are suggested, and all are accounted for in the Chinese government plan. I find that these parameters have been implemented in the Chinese society with varying levels of success. Nevertheless, Park (2017) lacks explaining how to implement and sustain open innovation overtime.

I argue that by combining Van den Broek & van Veenstra (2018) and Park (2017), it is possible to find that the data sharing of Alibaba entails a governance of decentralization. By having a decentralized approach to the data sharing, open innovation literature can be applied. I agree with the notion that there needs to be a more centralized governance for sensitive data. I highly disagree with van den Broek & van Veenstra (2018) that big data technologies are disruptive. The reason for my argument is that because big data is a technology which has given way for other technologies, it is not disruptive. In the analysis, the notion that interactions between platforms and third-party companies on Alibaba platforms, has access to data and can use it for other purposes, indicates a more decentralized data sharing characteristic, which is also in line with open innovation.

I have above highlighted my reasoning for why I find that the innovation and disruptive technology literature all have parts which have shown to be applicable in my analysis. My reasoning for showing this disparity in the literature is to indicate the need for a more normative theory which could provide for more generalization and clear understandings of what disruption is. Then would a normative theory be required before

we can solve the issue of whether disruption have transformative power in an economy's economic growth.

Implications

The next section will illustrate the contributions the paper has made and possible implications for academia, policy and professional development.

In the end the results indicate new questions on whether the categorizations were specific enough and what mechanisms might be explored in subsequent work, I suggest the evaluation of another Chinese company in another industry. Furthermore, I argue that it has been shown how the literature are in need for new input from new sources. The Disruption theory could need a more context dependent understanding, while keeping it to the disruption. On this point the paper has tried to overcome this through supplication of literature from national innovation system and Kilkkie et al. (2018). The implication these two has had on the disruption theory is to question what is disruptive and in what context. These questions are also found the critiques of Christensen's theory.

For the industry I have found that it is highly context dependent, but not that the industry is disruptive. The implications the Chinese state has on the industry is the regulatory limitations of e.g. financial capital, skilled labor, policies favoring the industry. Furthermore, the implications which could had been huge due to institutional voids, here is meant lack of skilled labor, access to finance, corruption and many more, has been successfully navigated by Alibaba and does therefore not implicate their operations like e.g. foreign firms. I argue that the implications for the industry is most explicit for foreign firms in the e-commerce industry operating in China. Amazon.com which has huge success in western countries are almost non-existing in the Chinese market.

In general, the implications of this study on society has highlighted a China, which has developed and has had a high focus on creating a more sustainable growth through innovation initiatives.

Limitations of the Study and Critical Reflection

In this section I will critically assess my limitations and reflect on what could have contributed to a more holistic assessment of how the Alibaba group's disruption can impact Chinese society towards a more sustainable economic growth.

In my research method it was argued that I would apply Christensen's theory building, where descriptive theory would be the aim of the paper. It was also found in the theory building article that the descriptive theory needed to be tested for anomalies until none could be found. This process was only completed once on this study. I find that for the process to be repeated more time would have been needed and a larger sample size.

From papers developed earlier in my master program, I have found that creativity in China and the west is different. This understanding could have provided insight into new categories which could have been evaluated to assess what disruption is in a Chinese context. I argue that this must be given high priority in a further study of the Chinese disruption. I reason this on a hypothesis that disruption has different characteristics depending on context. This could also help to get a clearer understanding of disruption and not innovation, which this paper has tended to focus on. Why this has happened can be contributed to the way western scholars identify disruption.

Agenda for Further Research

As argued earlier the whole process needs to be redone until no anomaly is found and as suggested above disruption must be redefined in the Chinese context.

Conclusion

For years the Chinese state has focused on transforming the Chinese society to its former glory, as leading economy. The focus has been on high output rates, which can also be seen in the high growth rates China has experienced over the last two and a half decades. China has become an expert in manufacturing, hence becoming the world's manufacturer. This stamp China is trying to get rid of, has it been evaluated that this form of growth cannot be sustained in the future. Since 2010 China's GDP growth rate has been dropping and are currently set to be 6.3 percent growth in 2019. Scholars and economists are all trying

to assess whether China will enter a middle-income trap or be categorized as a high-income economy. It is argued that innovation can be the solution to for overcoming the middle-income trap. I argue that disruption is needed to change the old system radically, I therefore combine disruption and economic growth to assess whether disruption from Alibaba can make this change happen. I decide to answer, “How can Alibaba Group’s disruption impact the Chinese society towards a more sustainable economic growth”.

I have in my literature review found 4 key areas of ideas and build on my theoretical framework. The key ideas for the structure of the theoretical framework have been Lundvall (2007) and Kilkkie et al. (2018), where Lundvall provided the context and Kilkkie et al. provided the structure of horizontal and vertical layers. The literature further provided for the identification of which measures should be in the framework. Here the idea of policies conducive for open innovation and creative destruction was well founded and suited the case company’s operations. The authors whom I looked to was (Christensen et al., 2001; Park, 2017). While Maclaurin’ (1953) understanding of patents, could provide for tangible measure of whether Chinese actually made improvements, which was enough to obtain a patent to secure its rights. Other scholars which has made key contributions to the theoretical framework are (Govindarajan, 2011; Hang et al., 2010), whom both looked at firms’ strategies in developing country contexts, these ideas have been applied in the analysis. Furthermore, Eichengreen (2012) finds that TFP has a huge impact on an economy’s growth. His findings is evaluated through quantitative measure, but are looking on what happen before and does not argue for how to sustain TFP. Cai (2012) finds that three key factors can help to overcome the middle-income trap. He identifies, a reform and transformation of government functions, the accumulate human capital through education and training, and maintain TFP growth.

These 4 key areas of literature have been developed into a theoretical framework, which are to answer, “How can Alibaba Group’s disruption impact the Chinese society towards a more sustainable economic growth”.

The results of the analysis have overall shown that disruption is hard to find in an innovation system. Though I will briefly outline the key findings, which can answer the research question.

The Horizontal analysis showed China's developments both overall in the political sphere, especially the focus on innovation capabilities, and education. It is clear after years of reforms, China's economy has become a high-middle-income country, while keeping their governance structure. Some of the key changes which has made it easier to do business for POEs and foreign firms. A higher emphasis on market forces to control the market and the SOEs mostly operating within industries classified as important for the nations security. Could this be the first signs of an environment conducive for creativity or does the state still control everything down to the last firm. The measures which I have tested have all been found in the Chinese innovation system, but they have not contributed to Alibaba's disruption transforming the Chinese society.

The Vertical analysis highlighted Alibaba's interactions in the Chinese innovation system. These interactions were divided into government, consumer and industry. It can clearly be found that Alibaba has interactions with the Chinese state and has so for many years. What is interesting with their government interaction is the CPC's intersection in Ant Financials. This resulted in Ant Financials having to change their business model and adapt to the context. This is the point where disruption could happen due to Alibaba's interaction with the eco-system. As found Ant Financials have both, changed consumers preferences on the method to pay for goods, developed a new need for firms to assess whether the contract will be upheld. In the note of whether Alibaba has disrupted the e-commerce industry, I have found no evidence of this in the Chinese eco-system. Rather, Alibaba has managed to keep new entrance from foreign firms to enter due to their lock-in effect, high switching cost and better understanding of consumer preferences.

To summarize, the contributions of the study have been to clarify how the Chinese innovation system functions and whether it could generate enough innovations to overcome a middle-income trap. There is therefore not found support for disruption being able to impact the Chinese society to have a more sustainable growth.

The research method has through my critical realist philosophical approach given way for a more holistic understanding of the research area. While I through my research approach have inductively develop the model for testing anomaly. While the research design has been operationalized through the case study of Alibaba Group. I have

throughout the paper assessed whether my operational measures for the phenomenon has been correctly constructed. Within the assessment of the measures applied I have in the literature review and the development of the theoretical framework established casual relationships. Generalizability have not been established and will first be established with multiple case studies. The data collection has happened through an extensive literature review of over 60 articles and public data has been applied to certain these findings. I argue that I have established constructed validity, internal validity and reliability, in this paper.

For future research, an evaluation of how China is creative and how this affects the definition of disruption, could prove to show that China already is disruptive, just in another way than western countries. Lastly, the current ideology of the Chinese state needs to be accounted for and implemented into an assessment.

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