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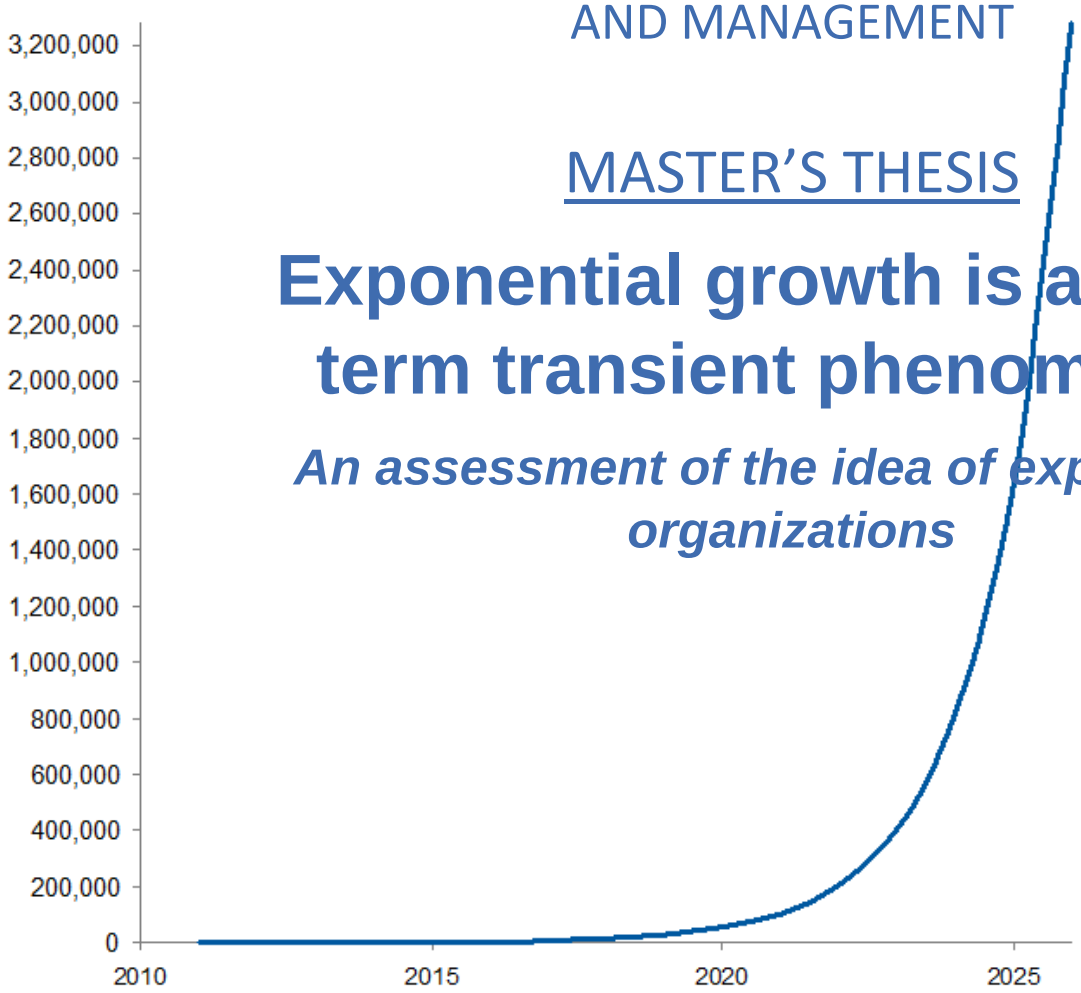


MASTER'S THESIS

# Exponential growth is a short-term transient phenomenon

## *An assessment of the idea of exponential organizations*

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## Abstract

The purpose of this thesis is to assess if a company can achieve and maintain exponential growth by applying an organizational design that allows the company to leverage information-based technologies and outsourcing.

The bold promise of the possibility to achieve and maintain exponential growth has tempted and will continue to tempt business executives, entrepreneurs and visionaries to believe that such growth can be possible. However, a master student at Copenhagen Business School can conclude that it is impossible to achieve and maintain exponential growth for companies in any industry, due to the absolute limits of the finite system of the earth as well as limitations embedded within the company itself.

However, dismissing the unachievable promise of exponential growth, the organizational design can present insights about intra- and inter-firm knowledge sharing. Nevertheless, the disconnect lies in the fact that while parts of the organizational design are beneficial for intra- and inter-firm knowledge sharing and application, it does not guarantee exponential growth in any sense.

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# Introduction

When public companies report high growth rates, it in general results in investors wanting to buy stocks, thus increasing the stock price. On the contrary, evidence for decay result in stockowners wanting to sell their stocks, hence decreasing the stock price. Market capitalization numbers can thus be argued to correlate with companies' growth rates. On a global, digital market, it is possible to grow internationally and thus further increase growth rates. However, growing internationally at high speed is not something achieved overnight. Companies, no matter the size, are struggling to find the right growth strategies, business models, and organizational design most suitable to international, rapid growth. If a blueprint for rapid, international growth existed, a majority of contemporary companies would indeed adapt their businesses according to it.

However, differences in ability to grow rapidly on the global market seem to exist. Airbnb and Uber are two examples of companies that have made an impact on two specific markets in several countries around the globe lately, and that have grown rapidly. Salim Ismail, a startup guru and former Yahoo employee, wanted to investigate why some companies are able to achieve rapid, international growth and some not. It led to the publication of the book *Exponential Organizations* in 2014. Based on the assumption that performance is key in business, and growth is decisive for performance, Ismail states that the incremental, linear way of which traditional companies get bigger can be disrupted by a fundamental change of the nature of the organization. By applying the right organizational design, companies are able to grow in a radical, exponential way and therefore outperform companies that are growing linearly.

In *Exponential Organizations*, Ismail presents a new way of designing organizations through which it is possible to achieve and maintain international, exponential growth. Yes, exponential growth, where every step of the growth process is bigger than all the previous steps combined. If we assume growth rates and market capitalization numbers to correlate, imagine the development of your company's market capitalization number if your business grew exponentially. Your reports would show analysts that your business is doubling, and

is doing so frequently, thus presenting fantastic growth rates. We know that fantastic growth rates in general means that investors will want to buy stocks, and a lot of them. Thus, the stock price will soar and obviously your market capitalization numbers as well. Talk about a powerful blueprint for international growth.

Consequently, I wonder how is it possible that a particular organizational design enable companies to achieve and maintain exponential growth. Ismail explains that it is possible to achieve and maintain exponential output due to the use of information-based technologies that have become accessible to the public due to an exponential price performance development. Furthermore, the democratized information-based technologies allows companies to leverage external resources to achieve their objectives, and thus accomplish a scalability that no traditional organization can achieve and maintain. Hence, information-based technologies following Moore's Law and the transfer of major business functions outside of the organization are two fundamental drivers that will enable companies to achieve and maintain exponential growth. They are fundamental since all internal limitations to growth will be overcome, and thus Ismail argues that any company can achieve and maintain exponential growth by applying his organizational design and simultaneously leveraging technologies. Therefore, the author concludes that a company can grow exponentially and maintain such growth by applying the proposed organizational design.

So what are the advantages of applying Ismail's blueprint for international growth? The author argues that it allows companies to become ten times better, faster, and cheaper than the average company. Most importantly though, exponentially growth will be achieved and maintained. Thus, Ismail claims to have created an organizational design that enables faster growth than any other known organizational design. The purpose of this thesis is to examine Ismail's claim and thus simultaneously assess whether the proposed organizational design can act as a universal blueprint for international growth.

The research question of this thesis will therefore be:

- Can a company achieve and maintain exponential growth by applying the organizational design proposed by Ismail in *Exponential Organizations*?

In the following pages constituting my thesis, I will answer this question. It is not an easy task and it will require me to disclose some facts concerning my private person, beyond being an academic researcher. The process of searching for the answer will be as important as the answers themselves, and I will therefore be transparent with all of its stages, which will be elaborated upon in a problem statement.

## Problem statement

Except promising better, faster, and cheaper organizations as well as exponential growth, why ought we to listen to Ismail? *Exponential Organizations* was the winner of Frost & Sullivan's 2014 Growth, Innovation, and Leadership Book of the Year, and was chosen by Benjamin Netanyahu, Prime Minister of Israel, to be one of Bloomberg's Best Books of 2015. Moreover, Ismail has digital and startup experience from being a vice president Yahoo, from building and running incubators, and from being an entrepreneur whom sold off a company to Google (Ismail, 2014). The book has thus gotten attention from the world of business, and it can be argued that Ismail knows what he is talking about. First, due to his experience from working at a company which business model is based on information technologies. Second, due to his experience from being an enabler for growth for startups, which tend to grow more rapidly than large companies do. Furthermore, Ismail did spend three years researching for this book, witnessing of extensive research to substantiate his statement of the ability to achieve and maintain exponential growth.

However, when observing the business landscape, it is difficult to find any examples of companies that managed to achieve and maintain exponential growth. Moreover, business schools are not teaching this particular organizational design at all. The lack of practical evidence and academic acknowledgement is making me suspicious of Ismail's growth blueprint. Is the concept of exponentially growing companies flawed?

To be able to assess the research question of this thesis, it is necessary to dissect the conclusion Ismail arrived at during his research for *Exponential Organizations*. As

mentioned on the previous page, the conclusion states that a company can grow exponentially and maintain such growth by applying the organizational design proposed by Ismail. The author claims to have used a deductive research approach to arrive at his conclusion, and therefore the argument will be treated accordingly.

In deductive reasoning, a conclusion inevitably follows from the premises presented, and therefore the conclusion will be true if the premises are true. Ismail's conclusion cannot be false, since it follows from three premises that he argues to be true. First, the continuity of Moore's Law will improve the price performance relationship of information-based technologies and hence enable any company to leverage technologies in order to achieve and maintain exponential output. Second, the democratized technologies enable companies to leverage outsourcing, allowing enormous flexibility and minimized costs since exponentially growing companies can maintain a very small core of employees and assets while growing. Third, there will be no internal limitations to grow exponentially and maintain that growth for companies applying the organizational design and simultaneously leveraging technologies. One by one, I will investigate whether these premises are true. If the premises are true, I can conclude that Ismail's conclusion is true. However, if evidence point to the fact that Moore's Law will not continue, the price performance relationship of technologies will not improve and thus not enable every company to leverage technologies to achieve exponential output. Similarly, if evidence point to the fact that outsourcing does not result in flexibility and minimized costs for exponentially growing companies, these companies cannot maintain a very small core of employees and assets while growing. Correspondingly, if evidence point to the fact that technologies does not continue to become democratized and therefore does not allow exponentially growing companies to maintain a small core of employees and assets, internal limitations to growth will limit the rate of growth. If this is the case, a company cannot achieve and maintain exponential growth by applying Ismail's organizational design.

### Structure

The thesis is organized as follows. The next section will introduce the reader to the research approach and research design adopted to answer if a company can achieve and maintain exponential growth by applying the organizational design proposed by Ismail. Archival research of the collective knowledge of my community will enable a deductive analysis in order to be able to answer the research question. The following section provides a comprehensive analysis of exponential growth of companies to enable a conclusion on whether such growth can be achieve and maintained. Each part of the analysis is summarized and its implications discussed. A critique on the research method of *Exponential Organizations* is thereafter presented to the reader in order to reinforce an understanding of the results of the analysis. The following section presents an alternative use for the organizational design, dismissing the possibility to achieve and maintain exponential growth. The final section provides a summary and conclusion on the impossibility to achieve and maintain exponential growth.

## Research approach

In order for me as a researcher to identify what factors will influence my research design, I have to develop a research approach that enables an appropriate assessment of my research question. The factors influencing the research design will be the ontological belief that reality is co-constructed by members of a community and that knowledge is a socially and culturally constructed human product. Hence, social factors in my environment, such as being a master student at a business school, will result in a research design particularly recommended for business students performing a theoretical analysis. I approach this research by examining the collected knowledge of my community, and thus the reader will be presented with deductive reasoning based on an archival study. The research approach section will therefore introduce the reader to key elements of the attempt to answer the research question of this thesis, and explain what will be measured and how it ought to be interpreted.

First, a set of assumptions regarding reality and knowledge will be agreed upon when developing the philosophical perspective of this research in the following paragraphs. This is an important basis for the research, since the choice of assessing the research question through archival research resulted from the assumption that members of my community and I collectively create reality and knowledge. Furthermore, this thesis will develop new knowledge about a newly introduced organizational design, and therefore aspects influencing this knowledge creation will be discussed.

## Research philosophy

In order to be able to answer the question of 'Why research?' it is necessary to develop a philosophical perspective. Core assumptions regarding reality and knowledge will elaborated upon, as such assumptions are decisive in my approach to answer the research question. As previously mentioned, I have chosen to elaborate on the perspective of social constructivism as the philosophical framework for this thesis. This section will thus present to the reader how I view the world and how I understand what I am investigating.

In 1966, Berger and Luckmann introduced the term social constructivism to social sciences and argued that reality is socially constructed. This is due to the embeddedness of knowledge and people's apprehension as well as supposition of what reality is in the institutional fabric of society. Meaning is embedded in society due to the process of the institutionalization of reciprocal interactions between members of society. (Berger & Luckmann, 1966) More simply put, social constructivists argue that reality is constructed by our own activity and that we collectively invent the world rather than discover it (Kukla, 2013). The next paragraph will inform the reader on the nature of reality, and thus my assumptions about the way the world operates.

The ontological assumption of social constructivists is that social objects are not given *in the world*, "/…/ but they are constructed, negotiated, managed, reformed, exchanged, and organized by human beings trying to make sense of what is happening around them." (Kelemen & Rumens, 2008, p. 31). Furthermore, reality is assumed to be constructed through human activity by the members of a group whom together invent the properties of the world (Kukla, 2013). When applying the social constructivist philosophy, we thus

assume that reality cannot be discovered since it does not exist prior to its social invention (Kim, 2001). As a researcher I hence see the world as socially co-constructed by the participants in my environment, call it my community. Therefore, I assume that social objects, such as organizations, are constructed, negotiated, and managed by human beings, such as myself, as we are trying to make sense of what is happening around us. As such, contemporary organizations are constructed and negotiated while we are trying to grasp the rapidly changing and increasingly international market place. Organizations are according to Saunders, Lewis and Thornhill (2009) thus created from the perceptions and consequent actions of social actors in a continual process of constant state of revision. In summary, I find it necessary to study the details and circumstances of the situation in which companies are claimed to be able to grow exponentially, since it is difficult to find any exponentially growing companies in my reality. The next paragraph will discuss what is considered acceptable knowledge.

The complexity of the business and management world calls for an emphasis on social actors and the meaning we give our everyday social roles as well as how we interpret these roles (Saunders et al., 2009). Therefore, I will adopt an empathetic stance and enter the social world of the research subjects in order to develop knowledge. Saunders et al. (2009) argue that an empathetic stance is highly appropriate when conducting business and management research, especially in such fields as organizational behavior and architecture where social actors are prominent indeed. Following the ontological assumption of social constructivism, there is an epistemological relativism about beliefs and knowledge. "This is the view that there is no absolute warrant for any belief- the rational warrant makes sense only relative to a culture, or an individual, or a paradigm." (Kukla, 2013, p. 4). Thus, knowledge is considered a human product that is socially and culturally constructed. Further elaborated, knowledge is created through individuals' interactions with each other and with the environment in which they live, and hence learning is viewed as a social process (Kim, 2006). Furthermore, intersubjectivity among individuals in a community plays an important role in the construction of knowledge. The intersubjectivity is formed by cultural and historical factors of the community, and influence the construction of

knowledge in addition to human interaction (Gredler, 1997; Prawat & Floden, 1994). Hence, the knowledge that I will develop in this thesis will be influenced by interactions with people in my community, such as my thesis supervisor and my family. When discussing the topic of the thesis and my concerns with *Exponential Organizations* with my supervisor and my family, their perspectives and arguments will prime my thinking. As an example, if one of my family members whom is interested in technology makes me aware of the fact that Moore's Law is about to end, I will look for literature on Moore's Law to investigate whether this statement is true. Thereafter, I will discuss my findings with that family member to further grasp the concepts and develop my argument. Thus, the knowledge I will develop in this theses will be influence by interactions with people in my community. Furthermore, my cultural background and the history of my community will influence this knowledge development. Hereby, I am aware that Ismail's cultural background and the history of his community influence the content of the book about ExOs.

My personal values play a role in all stages of the research process, and since I am concerned with the results to be considered credible I will inform the reader of them. My studies at Copenhagen Business School (CBS) have made me aware of the importance of being critical to newly introduced management literature, such as *Exponential Organizations*. Descriptive literature can be accepted as frameworks at best, but not as theory, which needs to be prescriptive. Descriptive management literature can often be bought at airports and tempt potential buyers with bold promises. Such books can be inspirational, but is considered an unsubstantiated opinion until hypotheses have been scientifically tested and confirmed. Hence, my preconceptions about management literature made me look for evidence of *Exponential Organizations* being descriptive. As such evidence was found in the first pages of the book, I chose not to consider it as a theory but a framework. Thereby, I wanted to test the framework in order to assess its validity. Thus, the research question developed into the question presented in this theses based on my preconceptions, which in turn are formed by my interactions with my community.

Furthermore, organizational design is an interest of mine, and personally I believe in flat hierarchies and freedom with responsibility, perhaps due to my Swedish cultural background. Ismail promotes flat hierarchies as well, and therefore I chose to search for benefits of reading *Exponential Organizations*, resulting in such a section. Moreover, I find organizations such as Tesla and Uber very fascinating, and I purchase their services, but I do not consider working there during the early stages of my career. Their business is smart and disruptive, I however have ethical considerations with how e.g. Uber treats their on demand drivers. Hence, I had preconceptions before I started to read about the organizational design proposed by Ismail, resulting in a negative attitude towards parts of the organizational design already from the start. Thus, I was suspicious of the idea of exponential organizations from start, and therefore designed a research question to question the idea. In addition, I have been part of small organizations growing rapidly, and experienced internal issues related to growth that consumed many resources. Hence, my preconception is that there will always exist internal limitations to growth, and thus I looked for such limitations for exponential organizations, resulting in a section discussing the matter. Nevertheless, I find it necessary indeed for corporations to adapt to the new norm of digital transformation. Thereby, I am interested in management theories that discuss the future of organizations. Thus, I chose to assess the idea of exponential organizations in order to gain new insights that I can discuss with my community. By having this conversation, I want to ensure the reader that I am aware that all stages of the research process will be influenced by my values. The relevance of my values have already been demonstrated in my topic selection and choice of philosophical approach, and will continue to show throughout the paper.

As previously mentioned, the social constructivist research philosophy emphasizes how meanings and understandings are the result of social factors. When applying this lens, peoples' beliefs can be explained by the intersubjective sharing of ideas in an established community (McKinley, 2015). Hereby, the research process will consist of an assessment of Ismail's beliefs about a particular organizational design that he claims to be the only option for corporations wanting to compete in the so called new economy. The social

factors of Ismail's community has led him to impose certain premises to his argument. The author thereafter claims his conclusion applies universally. My ontological and epistemological assumption influence the way I think about the research process, and thus the process will consist of an investigation from the perspective of my community. The knowledge base of my community will hence be consulted when performing the analysis and will thus be decisive for the conclusion of this thesis. According to Kelemen and Rumens (2008), the information available to the constructor, and her or his ability to handle it, is decisive for the attempt to make sense of the world. Thus, my view of the world and the social phenomena within it will be limited to the information available to me. Similarly, I assume that the same holds for Ismail when he wrote *ExOs*. Therefore, a limitation with this study will hence be the lack of knowledge from other established communities. Nevertheless, I will not try to impose my conclusion on any other community than my own.

The methodological belief, in social constructivism is interpretation of phenomena by having a dialogue (Kelemen & Rumens, 2008). As an example, I will ask questions throughout the theses. The purpose of this is to enlighten the reader of my thought processes, but also to make the reader aware her own thoughts and preconceptions. The thesis will therefore present the reader with an interpretation of Ismail's international growth framework by me having a dialogue with the written knowledge bank of my community. As previously discussed, this research is value bound, and hence I am a part of what is being researched. As such, I cannot be separated from the research, which will be subjective to some extent. Due to my interdependence with the research, I have chosen to present it with a personal language, but still in observation of academic standards. A personal language furthermore enables me to minimize the distance between the reader and me as a researcher. This thesis will therefore largely reflect my person, and thus provide the reader with an analysis reflecting my thought processes. Hence, the analysis will be based on the collective knowledge of my community, but it will be presented in accordance with my way of reasoning. According to Kelemen and Rumens (2008), a social constructivist research allows us to understand how meanings are constructed, and furthermore how these meanings are enacted in the behavior of participants of social worlds. My assessment of

Ismail's international growth framework will therefore contribute to the understanding of why scholars and the majority of managers in my community have not adopted the organizational design presented in *Exponential Organizations*.

As with every research philosophy, the social constructivist approach to research is criticized. The main critique concerns the lack of recognition of the materiality of the social world. This proposed materiality is argued to constrain and influence social meaning, as well as the conditions of possibility. (Kelemen & Rumens, 2008) This critique is interesting, since one can argue that material, such as scientific articles and books, will heavily influence and constrain my view of reality. Nevertheless, the material constraints of social worlds is exactly what I find interesting to bring to light, since it can enable an understanding of why certain communities cannot understand each other. In summary, the social constructivist approach will provide me with a powerful tool in order to assess the problem at hand and answer the research question.

To conclude, I want to raise a discussion about organizational growth, but also about how our social interactions and environments mold us into perceiving the world around us in the way we do. I want you as a reader to start thinking about the things that has formed you into the person you are, with your beliefs, values, and perception of the world. Furthermore, I intend to challenge you into understanding people with beliefs and values contradictory to yours. I am not saying that you ought to agree with them, just that you will gain the opportunity to understand why people have these beliefs and values and furthermore why they act as they do.

## The reality in which the researcher lives

I was born in the late 1980s in Sweden and was brought up in one of the rich, conservative suburbs just outside of Stockholm. My parents are both academics with extensive educational backgrounds, and so are our relatives and family friends too. During my childhood, I have thus been surrounded by academics who are interested in science, society, and politics. This trend has continued, and I today socialize with friends that all have university degrees and/or careers within e.g. the banking or management consultancy industry. Moreover, religion has never been important to nor my family, friends or me,

perhaps because of the strong belief in science. Nevertheless, I celebrate the protestant holidays, but only because it is tradition.

Education has occupied an obvious and major part of my life. I have been part of the Anglo-Saxon educational culture during the total of 17 years, with a bachelor degree in business and economics from Uppsala University in Sweden and soon a master degree in international management from Copenhagen Business School (CBS). Throughout these years, my attendance at school has been flawless and my grades excellent. Therefore, the academic research and corporate examples that I have been confronted with is largely British, North American, or Scandinavian. This is also true for the origin of the societal and corporate news I consume. The Economist (British), TechCrunch (North American), Dagens Nyheter and Svenska Dagbladet (Swedish), and Swedish state television news are the most prevalent knowledge and news sources in my life. Swedish state television is claimed to be objective and separated from the government. Nevertheless, they receive funds from the Swedish government, in which social democrats and parties on the left hold the majority of the power. The first time I was confronted with a different selection of research and corporations was during my exchange semester in Switzerland last year. Even though the University of St Gallen is strongly connected with North American pedagogy and research, I encountered several Germanic researchers and corporate cases. This experience made me think about the sources of our inputs derive from, since this largely influence and create our perspective on the reality surrounding us.

Not to forget is the daily, private inputs to which I am subject. My partner, with whom I live with, is well educated indeed and has a great interest in everything that concerns technology, science, society, foreign politics, etc. We often discuss these topics and complement or criticize each other's arguments with facts derived from the news sources we consume. In addition, I spend approximately ten minutes per day scrolling my Facebook feed and thus register what my network is expressing as well as read the information produced by the groups or pages in which I am a member. I join such groups and pages based on my interests, such as world order or new technology, but the majority is university related. Hence, my feed is mainly created by people I have met at the university or by

experts within the fields of my interests. However, I am rarely confronted with content and information produced by sources that I claim unreliable, such as tabloids and television news that are produced by other television channels than the state television, since I have chosen not to spend time on consuming such content, not even short news flashes.

I have been living in five different countries, whereof the majority in Sweden and only one country outside of Europe. Because of my interest in people and culture, the cultural differences between Sweden and the country of residence have always been discussed with friends and family. Therefore, I have spent time contemplating these differences, how they might have emerged, and how they influence the behavior of the residents.

What I want the reader to grasp from this section is the fact that the way I behave and think are under influence of my cultural background and thus also my construal of myself. This will result in implications for how my cognitive processes work, and how I perceive as well as analyze information, situations etc. I am a product of the social forces in my environment, and thus these forces are decisive when I consciously or unconsciously co-construct my reality with my social network. Due to the extensive influence my time at CBS has had over my cognitive processes, I argue that I am largely a product of the professors, the literature, and the coursework presented to me during the International Marketing and Management (IMM) master program. This thesis, then, is hence the final output of years of a steady flow of inputs from the IMM faculty.

### Reasoning approach

The reasoning approach of this thesis will be deductive in the sense that the conclusion will be based on the agreement of multiple proposition that are assumed to be true by my community. As such, established theories will be applied to assess the research question and I will in that sense proceed from the general to the specific. However, the reasoning approach will also have an inductive emphasis in the sense that I will collect qualitative data and have a more flexible structure than a strict deductive approach. Moreover, I will guide the reader by having an open dialogue about the cognitive process throughout the thesis. The dialogue will inform the reader about how someone from my community would attempt to make sense of phenomena in the world, such as a new international growth

framework. Hence, I will represent my community in the assessment of the research question, thus making this analysis applicable only in my community. Therefore, it is possible to argue that I will be a part of the research process. The findings of this thesis will subsequently be created throughout the thesis as the dialogue proceeds.

## Research design

The research will consist of an exploratory study consisting of a search of the literature treating the underlying premises of Ismail's conclusion of the necessity to adopt his organizational architecture. In addition, expert publications within the respective fields will be consulted. I find exploratory research to be particularly useful in the context of answering my research question, since I will be able to assess a phenomenon in a new light and adapt the study if it is subject to change as the research progresses. ExOs, which primarily exist in North America, is a new concept in the world of business and management, and thus an exploration of the concept is required.

My choice of research strategy has been guided by my research question, which is to assess whether Ismail's conclusion regarding the superiority of the exponential organization is based on true premises, as well as my objective to examine these premises from the perspective of my community. Furthermore, I believe the knowledge base of my community to be extensive in the respective fields under examination, while the concept of the exponential organization has only been introduced in recent years. Therefore, there is no data set available to study concerning the success rate of such organizational architecture, nor any scientific articles or other master theses written about this subject. Moreover, my philosophical underpinnings guides me to ask for advice from the existing knowledge bank of my community. Hereby, the research strategy of this thesis will be archival research. Hence, I will turn to administrative records and documents of my community as the principal source of data. The records and documents can be both recent and historical (Saunders et al., 2009), and this thesis will therefore mainly be based on secondary data analysis. Nevertheless, some of the records and documents, such as scientific articles, will constitute empirical data according to the scope of this thesis. Consequently, the concept of ExOs is so new that there is a very limited amount of data on

the subject. In addition, I find it utterly important to stay independent when collecting data in order to ensure high reliability. As such, my reading of a group discussion or interview do not influence the results. Avoiding observer bias and the limited access to empirical data on ExOs, I chose to turn to archival research to answer the research question.

## Data collection method

As already mentioned, this thesis will employ a qualitative research method to find rich data that allow for an in-depth picture of the respective fields of interest. Ismail mainly employed quantitative research to arrive at his conclusions in *ExOs,* and therefore I want to research a potentially opposing view to his existing mono-method research. Furthermore, a quantitative mono-method research follows from my choice of employing archival research in scientific articles and expert records. Consequently, the thesis will focus on non-numeric data and the data analysis procedure will thus both use and generate non-numerical data. The choice of employing a mono-method research is based on the fact that the concept of the exponential organization has only been introduced in recent years. Hence, there is no data set available to study concerning the success rate of such organizational architecture, nor any practitioners with extensive experience on the subject. Nevertheless, a multi-method research could have contributed with valuable findings, e.g. by interviewing CEOs from traditional organizations and ExOs respectively. However, the objective of this research is to ask for advice on the superiority of the exponential organization from scholars and experts within my community. As such, a qualitative method will be well suited to answer the research question.

The time horizon of this thesis will be cross-sectional, as it will investigate what is currently agreed upon by scholars and experts in my community. The aim with this research is to study the concept of ExOs in the contemporary world of global business.

As previously mentioned, the research question of this thesis will be answered by reanalysing secondary data, such as scientific articles and expert records. Therefore, the data will be compiled into these publications. Secondary data can be of different classifications according to Saunders et al. (2009), of which the secondary data in this thesis originates from different classifications. The search for secondary data started by

reviewing IMM course material, and if an article was found relevant in the quest to answer the research question, it was reviewed and interpreted. Furthermore, this review led to numerous more reviews of articles that was referenced to in the article chosen by IMM faculty to present to students. In addition, when a relevant topic was found, the most cited article or articles according to Google Scholar were always reviewed and interpreted. Hence, the articles and books once chosen by IMM faculty for course material and the most cited scientific articles in the world of science constitute the majority of the secondary data. However, when data was missing, the rest of the community was consulted, such as The Economist and professional blogs like TechCrunch.

Documentary data in the form of written materials, such as The Economist, and non-written materials, such as podcasts made by The Economist or YouTube clips of Albert Bartlett's famous lecture on exponential growth, will be included. Furthermore, multiple source data in the form of area based scientific journals, such as Management Review, Strategic Management Journal, and Journal of Management, will be included. Furthermore, survey data, such as Tadelis' (2007) survey data on outsourcing and data from surveys performed by global management consultant firms, will also be included. The majority of the secondary data will be found through CBS's library, which includes both physical and virtual books and articles.

In addition, advice from my community on where to find secondary data will guide my search. The advice will originate from parts of the community such as my supervisor and his recommendation on where to look for data and scientific articles referring to studies. Hence, the resources of CBS will be highly decisive for the availability of secondary data. By collecting secondary data, I am able to analyze comparative and contextual data to the primary and secondary data that Ismail collected for his research. Therefore, I will be able to place his findings in a more general context and triangulate his findings, resulting in the possibility to generalize the author's findings. In addition, the data utilized for this thesis will be open to public scrutiny. Nevertheless, there are also disadvantages with employing secondary data, as it has been collected for purposes that differs from my research question. Collecting primary data for the specific purpose of answering my research question would

have allowed be to meet my objective in an alternative way. However, the majority of the secondary data that will be collected in order for me to answer the research question of this thesis will be of higher quality than I could ever have collected myself.

## To achieve and maintain exponential growth

In the following, Ismail's conclusion stating that a company can achieve and maintain exponential growth by applying his organizational design will be tested. One by one, the three premises on which Ismail based his conclusion will be assessed in order to reach a conclusion on whether the premises can be declared true or false. First, the democratization of information-based technologies will be examined. Second, the costs and flexibility of outsourcing will be investigated. Third, limitations to growth embedded within companies will be explored. Subsequently, the assessment of the premises will result in a conclusion on the validity of Ismail's conclusion that a company can achieve and maintain exponential growth by applying his organizational design. However, to develop an assessment of the premises, exponential growth must be understood in detail. The next section will therefore explain exponential growth and what it entails.

### What does exponential growth entail? External limitations to exponential growth

In this section, I will discuss the fundamentals of exponential growth. Furthermore, examples of exponential growth of companies will be presented and thereby culminate in a discussion about what exponential growth entails. It will be shown that exponential growth is vastly different from steep, linear growth. Furthermore, it will be shown that if a quantity is allowed to grow exponentially, the size of the growing quantity will increase enormously. Moreover, it will be shown that external limitations to growth, such as the finite system of the earth, will constitute absolute limits to growth. Therefore, it will be concluded that exponential growth cannot be maintained.

First, let us turn to exponential growth of companies and Ismail's assertions about exponentially growing companies. Growing from e.g. one to two to four customers in three

years sounds likely to be achievable. However, growing from e.g. 100 000 to 200 000 to 400 000 customers in three years demands a lot from any company, and challenges are likely to accompany such growth. Important to understand is that when a quantity grows exponentially, it continues to follow this growth pattern. Nevertheless, startups as well as mid-market companies and large organizations can achieve and maintain exponential growth according to Ismail (2014). The author is convinced that "/…/ any stabilized environment or mid-market company can leverage ExO principles and transform itself to achieve exponential growth." (Ismail, 2014, p. 153). The ExO principles the author is referring to are the different parts of the organizational design he proposes for organizations to grow exponentially. The organizational design proposed by Ismail will be presented in the next section. Throughout the thesis, I will refer to companies applying this organizational design as ExOs.

Hence, what Ismail is saying is that any company can achieve exponential growth, as long as the company adjusts its organization and operations according to the design of ExOs. The reader will be acquainted with ExOs, but it is necessary to begin the assessment of Ismail's premises by understanding what exponential growth really means. It is necessary since Ismail's point with *Exponential Organizations* is to convince businesses that it is possible to achieve and maintain exponential growth if they become ExOs. From the conviction of Ismail, we turn to the words of Dr. Bartlett, a Professor Emeritus in Nuclear Physics.

Bartlett devoted his career to educate his audience about exponential growth, "/…/ the size of things, or the number of things, can never continue to grow indefinitely. In all systems, growth is a short-term transient phenomenon." (Bartlett, 1993, p. 178). Moreover, Bartlett (1993) recited the economist Kenneth Boulding, whom thought that anyone who thinks that exponential growth can continue indefinitely is either a lunatic, or an economist. To understand these arguments, let us turn to Bartlett's explanation of the exponential function and the effects on growth.

In the celebrated lecture *Arithmetic, Population and Energy*, Bartlett stated, "The greatest shortcoming of the human race is our inability to understand the exponential function."

(1995). The professor continued by educating his listeners about the consequences of the mathematics of continuous compounding, which is the math of exponential growth (Bartlett, 1993). Bartlett dedicated his career to enable people's understanding of the arithmetic and geometric of growth and the detrimental consequences of growth, especially in terms of the earth's finite resources. It is a fact that growth rates of consumption of resources cannot be sustained in a finite system such as planet Earth (Bartlett, 1995). Hence, if consumption of resources grows exponentially in a finite system, the access to resources will eventually become very limited. Therefore, we have to ask ourselves, if all companies were to become ExOs, what would be the consequences? Ismail does not discuss the consequences on the environment when companies are transformed into ExOs, nor does he discuss the exponential demand in resources that exponential growth of companies would entail. The lack of such a discussion can be caused by Ismail himself lacking an understanding of the exponential function. Thus, it is essential to achieve this understanding in order to enlighten the discussion of the concept of ExOs.

To understand exponential growth, it is necessary to examine some definitions. A quantity is said to be changing exponentially, or geometrically, if it is increasing or decreasing by a fixed fraction per unit time, e.g. 10 % per year. Conversely, a quantity is said to be changing linearly, or arithmetically, if it is increasing or decreasing by a fixed amount per unit time, e.g. 100 units per year. Exponential growth can also be continuous, thus meaning that the change in quantity is always increasing. (Bartlett, 1993) Hence, the difference between linear and exponential growth is a fixed *fraction* versus a fixed *amount*. Hereby, exponentially growing quantities never grow at a fixed amount, but at increasingly larger amounts for every new unit of time. Exponential growth appears in the same way as compound interest does. If you do not withdraw any money from your savings account, the total amount of money will increase due to the compound interest that is added to your account at the end of every year. The size of the interest rate is decisive indeed for the total amount of money in your bank account in the end of each year, but the frequency of calculating the interest and thus adding money to the bank account is important as well (Bartlett, 1993). Nevertheless, the appropriate frequency of compounding in calculations

regarding e.g. populations, or as Ismail claims, the amount of rooms for rent or programming hours for sale, is unknown. Therefore, continuous compounding is used to describe exponential growth of quantities, such as populations, that does not behave like money on a savings account (Bartlett. 1993). In summary, exponential growth is defined by the condition that the size of a quantity is increasing by a fixed fraction in a fixed length of time, which is true no matter where on the growth curve one is looking (Bartlett, 1993). Let us now turn to doubling times of such quantities.

The very characteristic of exponential growth, the fractional increase in size per unit time, reveals the decisiveness of the size of the fraction for the size of the total quantity at the end of a length of time. Thereby, one can calculate how many units of time are required in order for the quantity to increase by 100 %, thus double in size. The time required is called the doubling time (Bartlett, 1993). At a growth rate of 1 % per year, the amount of years required for a quantity to double is 69.3 years. However, at a growth rate of 4 %, the doubling time is 17.3 years, whereas the doubling time is only 3.47 years for a quantity that is growing at 20 % per year. (Bartlett, 1993) Thus, the size of the fraction unit of growth influence the time required to increase the quantity's size by 100 % in a very prominent manner. A different way to discuss the doubling time is to express it in terms of time in number of doubling times, and size of the growing quantity in multiples of the initial size (Bartlett, 1993). After one doubling time, the size of the quantity is twice the size of the initial size. After five doubling times however, the size of the quantity is 32 times the size of the initial size. Continuing to increase the amount of doubling times, the relationship can be expressed as; after n doubling times, the size of the quantity is $2^n$ assuming starting quantity of one. (Bartlett, 1993) Hence, exponential growth entails a snowball effect, in that the size of quantities is adding up by starting from small to very large, almost like an avalanche in increased quantity. To demonstrate snowballing numbers, or exponential growth, let us turn to an example.

Bartlett wanted everyone to understand a very important, and detrimental, feature of exponential growth. The size of the growing quantity becomes enormous after many periods of doubling times (Bartlett, 1993). As an example, imagine a quantity that is

doubling in size every year, after ten years that quantity will have grown to a size that is 1024[1] times larger than the initial size of the quantity. A startup initially producing 40 drones during its first production year, such exponential growth rates will result in the startup producing 20 480[2] drones in the tenth consecutive year. Furthermore, if that same startup were to continue this extraordinary rate of growth, the total amount of drones it will produce, and thus have on offer, during the 20th consecutive year will be 20 971 520[3] drones. In addition, it can be argued that it is likely to exist more than one drone producer on the global market. If we then assume the number of ten competitors supplying the global marketplace starting in January 2017, and furthermore assume all ten companies to grow in the same exponential manner as the first example, the market will be flooded with 204 800 drones during the year of 2027, and as many as 209 715 200 drones in 2037 alone. Picture the amount of total drones being produced during that period of 20 years: 419 430 000[4] drones. If we assume zero inventory and a world population of 7 billion people, that is one drone in 16 people. Perhaps the most difficult part to grasp is the fact that the amount of drones produced in 2038 will be greater than the total amount of drones previously produced during 20 years.

Imagine the resources and the production capacity needed in order to achieve this number. Moreover, visualize from where that demand will stem, and how that demand must grow exponentially in order for the drone startups to be able to sell their products. In 2037, the demand for drones must be equal to approximately 210 million customers wanting a new drone during the year. To conclude, the feature of exponential growth with a doubling time of one year is the size of produced quantity for the forthcoming year will be twice as large as the total production of all previous years combined. Similarly, in order for demand to meet supply, the level of demand for the forthcoming year will have to be twice as large as the total demand of all previous years combined. Please keep in mind that resources, capacity, and demand can only be found in the finite system of planet Earth.

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[1] $2^{10} = 1024$

[2] $40 \times 2^{10-1} = 20\,480$

[3] $40 \times 2^{20-1} = 20\,971\,520$

[4] $40 \times \sum_{i=1}^{n=20} 2^{n-1} = 41\,943\,000 \times 10 = 419\,430\,000$

However, if we were to consider a company offering a virtual 3D platform for its customers to design their drones, exponential growth results in different complications. If we assume infinite demand, and software as the only input, it is possible for the startup to grow its customer base exponentially due to the low amount of physical assets needed. Nevertheless, the growth of the startup will be limited by two apparent factors. First, the amount of customers can never exceed the number of people on the earth. Hence, the market will become saturated at a certain point. Second, access to funds will be decisive for access to the bandwidth required for such an expansion. The bandwidth required in order to meet the demand from approximately seven billion customers will be difficult to access by renting servers with bandwidth providers. Therefore, the startup will need to build its own server center and thus demand access to generous funds.

To conclude, the two examples of manufacturing drones and providing a digital design platform are general and oversimplified. However, by exemplifying exponential growth I want the reader to achieve a correct understanding of what exponential growth entails and what kind of limitations are associated with such growth. As shown in the examples, the required resources, production capacity, demand, saturated markets, bandwidth, and access to funds amongst other things will constitute limiting factors to growth in a finite system such as planet Earth. Therefore, it is concluded that exponential growth cannot be maintained for an indefinite period.

Any company wanting to grow will encounter different limitations to growth, limitations that can be both external and internal to the company. Unlike internal limitations to growth, external limitations to growth are out of control for any company. External limitations such as legislations or policies can e.g. limit possibilities to expand into certain markets or limit what product offer is allowed. Furthermore, legislations and policies can abruptly change competitive conditions. In addition, companies can never plan for things they do not know, such as a new shift in technology, which can radically change the rules of the game and make a product or service redundant. Hence, external limitations to growth are important to consider indeed. However, this thesis will only discuss limitations that can be influenced by companies. This is due to the research question asking if a company can achieve and

maintain exponential growth by applying the organizational design proposed by Ismail. Thus, the focus of the thesis is primarily internal.

As stated on page one, Ismail argues that growth is decisive for performance, and exponentially growing companies will therefore outperform competitors growing linearly. However, the author fails to discuss what will be required from the company's direct environment, such as the value chain. Ismail did not touch upon issues such as the need for increased size of offices or production sites, increased need of support activities such as firm infrastructure and human resource management, or increased amount of sales channels etc. Furthermore, if output increase exponentially, so must input, which requires suppliers to increase their output exponentially. Thus, the whole value chain will need to grow exponentially. Moreover, as human beings, we think and function linearly and this will be the case for human beings internal to the company, such as managers and employees, as well as human beings external to the company, such as customers. Thus, exponential supply will not translate into customers wanting to purchase exponentially increasing quantities. However, Ismail does not discuss the value chain of companies at all and assumes infinite access to resources and inputs as well as infinite demand, which makes the idea of exponential growth non-realistic.

In addition, Ismail does not consider the detrimental consequences of errors growing exponential in size. Imagine a rollout of cars with flawed software that the company will need to recall. It can be costly, but more importantly it will damage the reputation of the company and most likely result in decreased market capitalization. Exponential growth has several drawbacks in practice, which of none are discussed by Ismail. The author's reality is smooth and flawless, but Ismail simultaneously argues of an increasingly complex world. Therefore, I find the argumentation throughout the book to be biased and inconsistent. Thus, the purpose of the thesis will be to present a less biased view of the reality.

To conclude, the fundamentals of exponential growth was discussed in this section. Furthermore, examples of exponential growth of companies was presented and culminated in a discussion about what exponential growth entails. It was shown that exponential growth is vastly different from steep, linear growth. Furthermore, it was shown that if a

quantity is allowed to grow exponentially, the size of the growing quantity will increase enormously. Moreover, it was shown that external limitations to growth, such as the finite system of the earth, constitute absolute limits to growth. Therefore, it was concluded that exponential growth cannot be maintained.

### Summary

The purpose of this section was to enlighten the discussion of exponential growth and what it entails. Exponential growth causes a snowball effect in consumption of resources that cannot be sustained in a finite system such as planet Earth. It was shown that external limitations such as resources, production capacity, and demand will constitute absolute limits to growth. Exponential growth of any kind can therefore not be maintained for an indefinite period. Moreover, unlike small startups, it will be very difficult for large companies to achieve exponential growth due to the size of their operations. The increase in size of any quantity is 100 % per doubling time. However, a 100 % increase of 400 000 customers present vastly different challenges compared to a 100 % increase of four customers. Thus, exponential growth is but a short-term transient phenomenon possible perhaps for companies starting with small sizes of output. Furthermore, it has been shown that any company wanting to grow will encounter limitations to growth, which can be both external and internal to the company. However, Ismail assumes infinite access to resources and inputs as well as infinite demand, and leaves out the required adjustments of entire value chains from his discussion, making the idea of exponential growth rather non-realistic. Hence, exponential growth has several drawbacks in practice, which of none are discussed by Ismail. The author's reality is smooth and flawless, but Ismail simultaneously argues of an increasingly complex world. Therefore, the argumentation throughout the book is found to be biased and inconsistent. Hereby, Ismail's conclusion stating that a company can achieve and maintain exponential growth by applying his organizational design is considered distorted. Thus, the objective of the thesis will be to present a less biased view of the reality.

It has thus been concluded that exponential growth cannot be maintained for an indefinite period and that several limitations to exponential growth exists. It is therefore increasingly interesting to assess the premises on which Ismail concluded that a company can achieve and maintain exponential growth by applying his organizational design. Can ExOs overcome limitations to growth that traditional companies cannot? For the reader to fully grasp the concept of ExOs, the organizational design needs to be specified more clearly. The next section will therefore present the organizational design of ExOs according to its original presentation in *Exponential Organizations*.

## The organizational design proposed by Ismail

In this section, an overview of the organizational design of ExOs will be presented to the reader. First, the massive transformative purpose of ExOs will be introduced. Second, the reader will become acquainted with the five externalities of ExOs. Third and last, the five internal mechanisms of ExOs will be presented. This section will not contain any personal reflections or comments, nor will anything be questioned based on the collective knowledge in my community. Hence, the section will present the organizational design of ExOs according to its original presentation in Ismail's book *Exponential Organizations*. It can be considered as a summary of the organizational design, in which I have presented the most vital information. The aim is to make it an objective presentation, but it is subjective to some extent since it is based on what I find critical for the reader to know.

Based on his research, Ismail identified common traits across all organizations he claimed to be exponential. The major characteristics of ExOs are a Massive Transformative Purpose (MTP), five internal mechanisms, and five externalities that are leveraged to achieve exponential growth (Ismail, 2014). Ismail states that it is not necessary to hold all ten attributes, but the more internal and external attributes an organization has, the more scalable it tends to be. However, a minimum of four implemented attributes are needed in order to accelerate ahead of competition. The author describes the externalities as managing growth, creativity and uncertainty, while the internal mechanisms focus on order, control and stability. (Ismail, 2014)

### Massive transformative purpose

A massive transformative purpose (MTP) is a position statement that communicates the organization's purpose of existence. An example is Google's MTP, "Organize the world's information." (Ismail, 2014, p. 54), which also show the aspirational character of MTPs. A MTP ought to state what the organization aspires to accomplish, not what it does, and to capture the hearts and minds of individuals both internal and external to the organization. The more radical the aspirational purpose of the organization is the better. All of the ExOs Ismail has studies has a MTP to follow the original purpose and direction of the organization, as well as to generate a cultural movement. A truly inspirational MTP generates the formation of a community around the organization, which begins operating on its own and thus providing the organization with its own tribe and culture. As such, a pull effect is created, and the community takes ownership of functions such as production, marketing, and product development. Subsequently, the focus of the small core team of the organization is allowed to shift from internal politics to external impact. The external focus of the organization enables it to stay in close contact with their markets and customers, thus providing the team with critical insights on demand. Furthermore, being externally focused allows the organization to spot rapidly approaching technological or competitive threats. Ismail summarizes the MTP section by explaining why having a massive transformative purpose is important for organizations. A MTP is important because it enables coherent exponential growth, it binds collective aspirations, it attracts top talent across the ecosystem, it supports a cooperative/non-political culture, and it enables agility and learning. However, these outcomes of employing a MTP will only be possible if the MTP is unique, if the leaders of the organization 'walk the walk', and if the statement supports all three letters in the acronym. (Ismail, 2014)

### Externalities; SCALE

The five externalities consist of staff on demand, community and crowd, algorithms, leveraged assets, and engagement. The acronym of the externalities is thus SCALE. ExOs leverage these externalities to different extents in order to achieve performance gains. Flexibility, speed, agility, and learning can all be maximized by leveraging these

externalities, and it is therefore possible for ExOs to scale outside their organizational boundaries (Ismail, 2014).

### *Staff on demand*

In a fast changing world, staff on demand in necessary for speed, functionality and flexibility for any exponential organization. The key to create and run a successful exponential organization is to leverage personnel outside the base organization (Ismail, 2014). Ismail states that "/…/ having a permanent, full-time workforce is fraught with growing peril as employees fail to keep their skills up to date, resulting in personnel in need of greater management." (2014, p. 59). The author examined a company called Kaggle and found evidence for non-experts, or outsiders, to beat experts in most cases. This, he argues, "/…/ show the power of fresh thinking and diverse perspectives." (Ismail, 2014, p. 61). Furthermore, a large workforce reduces maneuverability and slows down the organization, almost like an anchor (Ismail, 2014).

Ismail makes the assertion that by the year of 2020, five billion people will be online globally, and as their brains will be available to work from wherever they are, they constitute an enormous pool of talent ready to work for your organization. The author is very excited and eager to employ the soon to be unleashed capabilities of the digital talent. In order for the staff on demand externality to work, interfaces and clear task specifications are necessary to implement in the organization. Subsequently, successfully leveraging staff on demand enables learning dues to fresh perspectives, allows agility, and forms stronger bonds among core team members. (Ismail, 2014)

### *Community and crowd*

The community of an organization is according to Ismail constituted by core team members (the organization), users, customers, former team members, partners, vendors, and fans. Hereafter, staff on demand and lastly the crowd, or everyone else. Communities are not a new to the human race, but the internet has enable us to create trait-based communities, none of which depend of physical proximity. These communities allow people to communicate with peers that share intent, belief, resources, preferences, needs, and other characteristics. Ismail explains that a true community only occurs when peer-to-peer

engagement occurs. Furthermore, the author emphasize the importance of accountability for community performance, and therefore strong leadership to manage the community is required. (Ismail, 2014) Why is community important for ExOs? When your organization has a true community, the core team will have the ability to tap "/…/ into a large group of passionate enthusiasts who contribute time and expertise." (Ismail, 2014, p. 63). Moreover, a community reassures that you do not have to find the right people, since they will find you. (Ismail, 2014)

Ismail teaches the reader how to build a community around an exponential organization in three steps. First, the organization ought to use the MTP to attract and engage early members. Second, the organization needs to nurture the community, since it is a long-term, strategic investment. Third, the organization ought to create a platform to automate peer-to-peer engagement. Being surrounded by a community enables the exponential organization to maximize the chances of serendipitous learning between the core team and individuals external to it. (Ismail, 2014)

While staff on demand is managed, you tell workers what they have to do, crowd is pull-based and you thus let people find you. The crowd is harder to reach than the community, but its numbers are much greater. An exponential organization can leverage the crowd in several ways. First, it can harness creativity and innovation through the use of tools and platforms. Second, the organization has the possibility to validate that products and services meet pre-determined specifications. Third, the organization can raise capital from a very large number of small investors, which also serves as a litmus test of demand on the market. In addition, the exponential organization can leverage their platform to democratize access to working capital by circumventing the burden of product risk and even inventory costs. Supply and demand are matched and the exponential organization can thus rely on suppliers to bear the inventory risk and the community and by leveraging crowdfunding crowd to bear the product risk. (Ismail, 2014)

Ismail claims that ExOs leverage community and crowd for many functions that traditionally have been handled inside the company, such as idea generation, design, marketing, sales etc. As such, these organizations are able to tap into the cognitive surplus

of the world, namely the enormous amount of free time that global citizens can commit to shared projects. Organizations with this external focus empower their community and crowd to become extensions of the organization itself. (Ismail, 2014)

The two externalities of *staff on demand* and *community and crowd* of ExOs are decisive indeed for the rapid growth of such organizations. Ismail claims that a result of leveraging these externalities is the decreased workload on the core team, while its flexible workforce increases. Thereafter, the organization becomes impressively agile and improves its learning and unlearning due to the diversity and volume of its flexible workforce. (Ismail, 2014)

### *Algorithms*

Ismail argues that algorithms have become mission critical to the contemporary as well as future organization. The world is run on algorithms and they are everywhere in modern life, making sense of companies' huge amounts of data. Furthermore, learning algorithms will influence and perhaps even disrupt many white-collar jobs. Moreover, leveraging algorithms allow organizations to rely on data-driven business insights and decisions. The use of data-driven insights and decisions circumvent the intuitive guesses of leaders as well as the mitigation of heuristics in human cognition, such as the anchoring bias or the confirmation bias. Hereby, Ismail believes that the impending explosion of data, due to the deployment of trillions of sensors globally, makes algorithms a critical future component of every business. (Ismail, 2014) However, not only are they critical for business in general, algorithms are critical for exponential organizational growth "/…/ given that they are much more objective, scalable, and flexible than human beings." (Ismail, 2014, p. 73-74). To conclude, when cultural acceptance of algorithms is in place, ExOs are able to leverage algorithms to produce fully scalable products and services. Furthermore, algorithms decrease error rates to stabilize growth while also being easily updated. (Ismail, 2014)

### *Leveraged assets*

Opposed to owning assets, ExOs rent or share assets and even outsource mission-critical assets (Ismail, 2014). The author claims that the contemporary information age enables companies to "access physical assets anytime and anywhere /…/ Technology enables

organizations to easily share and scale assets not only locally, but also globally, and without boundaries." (Ismail, 2014, p. 74). Leveraging assets is similar to leveraging staff on demand for ExOs, as such organizations retain their flexibility by not owning assets, even in strategic areas. Ismail explains that the need for staff to manage assets is eluded and thus flexibility is optimized, allowing the organization to scale incredibly fast. The authors educates the reader by arguing that accessing is better than possessing when assets are information-based or commoditized, and thus non-ownership is the key to owning the future. However, Ismail states that when an asset is rate or extremely scarce, possessing is the better option. Thereby, prerequisites for leveraging assets is abundance or easy access to the assets in question. Furthermore, successfully renting or sharing assets depends on the use of interfaces. (Ismail, 2014)

To conclude, Ismail argues this organizational technique to allow scalable products, to lower the marginal cost of supply, and removing the need to manage assets. Moreover, renting or sharing assets increases agility. (Ismail, 2014)

#### *Engagement*

Ismail states that ExOs leverage collaborative human behavior by employing user engagement techniques. Digital reputation systems, games, and incentive prices all comprise engagement techniques that enables virtuous, digital feedback loops within the exponential organization and its community. (Ismail, 2014) The author argues that leveraging engagement "/…/ allows for faster growth due to more innovative ideas and customer and community loyalty." (Ismail, 2014, p. 77). Engagement is the answer to the question of how to enable, foster, organize, galvanize, and act on the fundamental human capacity to contribute as well as work together, and as such provide your organization with positive spillover effects. Thereby, Ismail explains that leveraging engagement creates far-reaching network effects and digital feedback loops with users. Engagement techniques can be used to influence customers and other external stakeholders, but also to boost collaboration, innovation, and loyalty internally. (Ismail, 2014)

The engagement technique of incentive competitions is a typical characteristic of exponential organizational techniques according to Ismail, as it enables the organization to

find promising people in the crowd and move them into the community. Furthermore, incentive competitions challenge, leverage, and motivate the community to produce potentially radical breakthrough ideas. The technique provokes small teams or lone innovators to transform industries, however, the most important side effect is the extraordinary level of innovation it creates as several competitors race towards a common goal. Engagement of its community and crowd is critical for ExOs according to Ismail. Furthermore, it is a key element for scaling the organization into the community and crowd. (Ismail, 2014)

To conclude this section concerning how ExOs leverage externalities in order to grow exponentially, Ismail argues that the MTP and the components of SCALE can be applied to any organization, small or large. The authors furthermore explains that ExOs "/…/ scale outside their organizational boundaries by leveraging or accessing people, assets and platforms to maximize flexibility, speed, agility and learning." (Ismail, 2014, p. 84). To conclude, the author emphasizes the much needed strategic flexibility to be possible only if the organization is information-enabled and assets and workforce are owned and employed to a minimum. (Ismail, 2014)

### Internal mechanisms; IDEAS

Ismail argues that the five externalities mentioned in the previous paragraph produce an abundant output, which ExOs manage with guidance from the MTP and the control framework offered by the internal mechanisms. In order for these organizations to process all the inputs delivered by the externalities, the internal organization must be robust, precise and properly tuned. Hence, the exponential output requires ExOs to manage the internal control mechanisms carefully and efficiently. These five internal mechanisms consist of interfaces, dashboards, experimentation, autonomy, and social technologies. (Ismail, 2014)

#### *Interfaces*

ExOs bridge the SCALE externalities to the internal IDEAS mechanisms trough the filtering and matching processes of interfaces. Interfaces are self-provisioning platforms that enable the ExO to scale, since interfaces are algorithms and automated workflows that route the output of SCALE externalities into the core organization. According to Ismail,

using interfaces result in more effective and efficient processes, thus reducing the margin of error, and are hence critical to ExOs scaling on a global level. Interfaces feature both heavy instrumentation and metadata gathering that feeds ExOs' Dashboards. At peak productivity, interfaces empower ExOs' management of SCALE externalities such as staff on demand as well as community and crowd, making interfaces mission critical for scalability. Thus, Ismail explains interfaces as allowing ExOs to manage abundance. (Ismail, 2014) "SCALE elements are generate large result sets, meaning Interfaces are geared towards filtering and matching." (Ismail, 2014, p. 90). Interfaces are dependent on standardized processes, scalable externalities, and algorithms. To conclude, interfaces are important to filter external abundance into internal value and bridge between external growth drivers and internal stabilizing factors. Furthermore, they are important since automation allows scalability. (Ismail, 2014)

### *Dashboards*

Real-time, adaptable dashboards with essential company and employee metrics are a new way to measure and manage organizations according to Ismail. The dashboard is accessible to everyone in the organization. Dashboards are key to ExOs since growing at rapid pace requires that instrumentation of the business as well as individual and team assessments are integrated and carried out in real time. Furthermore, tight control frameworks, such as dashboards, are critical to managing hyper growth. Prerequisites for dashboards are real-time metrics tracked, gathered and analyzed by the ExO. Moreover, dashboards must be accepted by employees. Dashboards are critical to track growth drivers in real time and minimize exposure from errors due to short feedback loops. (Ismail, 2014)

### *Experimentation*

Ismail defines experimentation as "the implementation of the Lean Startup methodology of testing assumptions and constantly experimenting with controlled risks." (Ismail, 2014, p. 95). Experimentation is crucial in order to continue to evolve. Therefore, Ismail argue that constant experimentation and process iteration are the only ways to reduce risk. The Lean Startup method is based on lean manufacturing, and consist of a circular flow of ideas that are built into code, and then measured to produce data, which result in learning and new ideas. Hence, it is a scientific, data-driven as well as customer-driven approach to practical

innovation. The motto is to fail fast and fail often, while eliminating waste. Experimentation is dependent on measurement and tracking of experiments, and cultural acceptance of a willingness to fail is a prerequisite. Experimentation is important in order to keep processes aligned with rapidly changing externalities as well as maximizing value capture. Due to the Lean Startup method, minimum viable products can be tested by the market, thus bringing products and services faster to the market. In addition, risk taking provides an edge and faster learning. (Ismail, 2014)

### *Autonomy*

Ismail describe autonomy as " self-organizing, multi-disciplinary teams operating with decentralized authority." (Ismail, 2014, p. 102). The author claims that autonomy is a prerequisite for permissionless innovation, since such an organizational style creates a sociable, open and trusting culture. In turn, Ismail believes that such culture results in highly satisfied staff. Furthermore, the classical hierarchical structures of traditional companies are optimized for efficiency, and not adaptability, which the author claims is more important. Autonomy entails a change in the role of the manager, but does not imply a lack of accountability. (Ismail, 2014) Hierarchies still exist, but they are "/…/ competence-based hierarchies, relying more on peer accountability than on authority-based accountability /…/" (Ismail, 2014, p. 105). Hence, the hierarchies in the social network of ExOs rely on accountability to someone who possesses knowledge. Ismail moreover claims that employee autonomy is not just for small companies, but for companies of any size. Autonomy is dependent on self-starting employees, a MTP as a gravity well, and dashboards. The author states that autonomy results in increased agility, more accountability at customer phase, faster reaction and learning times, and better morale. (Ismail, 2014)

### *Social technologies*

Social objects, activity streams, task management, file sharing, telepresence, virtual worlds, and emotional sensing comprise social technologies from Ismail's perspective. When these elements are implemented in an organization, transparency and connectedness are created. Furthermore, they lower the information latency of the organization. The ultimate objective is to have zero time between idea, acceptance, and implementation. Due to social

technologies, organizational intimacy is increased, decision latency is reduced, and knowledge improves and is more widely spread. Hence, these technologies enable the real-time company. Prerequisites for social technologies are the MTP, cloud social tools, and a cooperative culture. Faster conversations, decision-cycles, and learning are outcome of implementing social technologies. Furthermore, they stabilize teams during rapid growth. (Ismail, 2014)

To conclude the previous paragraphs covering internal mechanisms, Ismail states that ExOs have very little inertia due to low numbers of employees, assets and organizational structures. Low inertia allows for extraordinary flexibility, which is a critical quality in today's volatile world. (Ismail, 2014)

According to Ismail, the key takeaway from the organizational design of ExOs is "The more assets and workforce you have, the harder it is to switch strategies and business models. The more information-enabled you are, the more strategic flexibility you have." (Ismail, 2014, p. 115).

As mentioned in the introduction and on page 21, Ismail claims that growing exponentially is a means for companies to outperform their peers. The output of ExOs grows exponentially due to the use of organizational techniques, such as staff on demand, community and crowd, and leveraged assets, that leverage accelerating technologies (Ismail, 2014). Ismail explains that "/…/ while even cutting-edge traditional companies can only achieve arithmetic (linear) outputs per input, an ExO achieves geometric (exponential) outputs per input by riding the doubling-exponential pattern of information-based technologies." (Ismail, 2014, p. 45). Thus, the use of accelerating technologies is a prerequisite and driver for being able to leverage external resources, such as leveraged assets, and thereby achieve and maintain exponential growth. The doubling-exponential pattern the author refers to is the pattern of Moore's Law, which will be discussed in the following section.

## The end of Moore's Law

In this section, I will discuss the first of Ismail's premises on which he bases the conclusion that a company can achieve and maintain exponential growth by applying his proposed organizational design. The premise states that the continuity of Moore's Law will improve the price performance relationship of information-based technologies and hence enable any company to leverage technologies in order to achieve and maintain exponential output. The reader will be presented with Ismail's claim that Moore's Law will continue and thus enable small teams as well as large corporations all over the world to leverage external resources. However, contradicting evidence on the continuity of Moore's Law will be presented. First, it will be shown that absolute physical limits of transistors and engineering challenges to reach that limit will result in the end of Moore's Law. Second, it will be shown that capital constraints will result in the end of Moore's Law sooner than the engineering challenges can be overcome. The price performance relationship of information-based technologies will hence not continue to improve in the same manner as it has done in the past, thus not enable every company to leverage such technologies in order to achieve and maintain exponential output. Therefore, the premise will be declared false, thus questioning whether a company can achieve and maintain exponential growth by applying Ismail's organizational design.

Let us first investigate the role of technologies for ExOs. As mentioned on the previous page, Ismail explains the doubling-exponential pattern of information-based technologies to be a prerequisite and driver for ExOs to leverage external resources, such as leveraged assets, and thereby achieve and maintain exponential growth with a small core of employees and assets (2014). "Leveraged by new generations of technology that, thanks to Moore's Law, have emerged every few years, the infrastructure is now in place for many industries to move to this framework /…/." (Ismail, 2014, p. 117). Hence, Ismail attributes the possibility and success of ExOs mainly to the democratization of technologies, which has been enabled by the effects of Moore's Law. Moreover, the author assumes a continued doubling-exponential pattern of information-based technologies approximately annually (Ismail, 2014). Thus, Ismail claims that the price to purchase information-enabled technologies as well as the cost of putting them to use has decreased due to the effects of

Moore's Law and will continue to do so due to the continuity of Moore's Law. To investigate this argument further, the effects of Moore's Law need to be specified more clearly.

In 1965, Gordon Moore publicized a paper describing his observation of a doubling every year in the number of transistors per integrated circuit (Moore, 1965), which was revised to a doubling every second year a decade later (Rasgon, Ferragu, Mark, Newman, Ranjit Ramachandran, Chadha & Milles, 2013). Moore predicted this patters to continue for at least another decade (1965), but his observation has predicted virtually every information technology related advancement since the 1960s (Rasgon et al., 2013). The effects of Moore's Law has led microprocessors to either double in power at the same price, or halve in cost for the same power roughly every 24 months throughout several decades after Moore's original observation (Cringely, 2001). Hence, the effects of shrinking transistor size has resulted in integrated circuits improving the price performance relationship of microprocessors in an exponential manner, meaning exponential growth in performance or decay in costs. Hence, it is Ismail's assumption that a decay in costs for the manufacturer translates into decreased customer prices. Pay attention to the fact that Moore's Law is not a natural law, but an observation or projection of a phenomenon.

Furthermore, Moore's Law is said to drive performance enhancement, thus also driving replacement dynamics, but also cost efficiencies and hence growth (Rasgon et al., 2013). Thus, it can be argued that organizations being able to harness the exponential improvement in the price performance relationship in information technologies increase their ability to grow and hence improve performance. Thereby, I begin to understand the importance of technologies riding on the back of Moore's Law for ExOs.

Let us investigate in more detail why the effects of Moore's Law are important for ExOs. Ismail argues that we are seeing a democratization of both information and technologies due to Moore's Law, resulting in the broad masses being able to access and afford technologies that previously only were accessible by big corporations (2014). Furthermore, Ismail states that domains and technologies are becoming information-enabled, and by riding on the back of Moore's Law, the costs drop and thus makes it possible for anyone to

access these domains and technologies (2014). The properties of Moore's Law hence enable ExOs to access domains and technologies that previously were out of reach due to high prices and cost structures. Democratization of technologies is important for the proposed organizational design since ExOs use organizational techniques that leverage technologies in order to be able to achieve and maintain exponential output. Being able to access technologies is thus a prerequisite for ExOs to leverage outsourcing and thus only maintain a small core of employees and assets while growing exponentially.

Due to exponentially dropping costs and improved performance of existing as well as new generations of technologies, Ismail claims a shift of the power in the marketplace to organizations adopting the organizational design of ExOs (2014). Low-cost access to technology and tools are empowering individuals and small teams all around the world (Ismail, 2014). Therefore, Ismail enlightens the reader about the fact that democratization of technologies enable hundreds of startups to attack and disrupt traditional markets in every industry (Ismail, 2014). Being able to disrupt traditional markets in every industry is what makes ExOs better than other organizational designs. Cheap technology provides small and large companies with unprecedented opportunities, which they can benefit by applying the organizational design proposed by Ismail. However, that argument is based on historical developments. Ismail thus predicts the future by looking at what has been achieved in integrated circuit improvement during the previous 50 years. Predicting the future by using historical numbers is exactly what Ismail claims to be utterly wrong about traditional companies. However, the author is no better.

Continuing, Ismail states that the hardware world is also enjoying the information acceleration, not only software development (Ismail, 2014). The author bases his assumption on the claim that information-enabled technologies power cost drops across every business function, not only sales and marketing as with the introduction of the Internet (Ismail, 2014). Hence, the author asserts the current development in information-enabled technologies to be more important than the introduction of the Internet, emphasizing the power of the proposed organizational design.

Based on the previous paragraphs of this section, I derive that information-based technologies are important to ExOs, since they enables small startups to scale their business without the same access to funds as established companies. On the other hand, using information-based technologies in order to be able to leverage external resources, such as staff on demand and leveraged assets, enables companies with large output quantities to scale by maintaining only a small core of employees and assets. Cost drops in every business function as well as increased ability to scale the business sounds promising indeed. From Ismail's assertions, we turn to empirical studies of the continuity of Moore's Law.

It puzzles me that Ismail is convinced of the continuity of Moore's Law. Experts and academics have seen evidence for Moore's Law to rapidly becoming invalid, including Gordon Moore himself. Rasgon et al. performed a thorough investigation and found that Moore's Law is indeed about to be broken, since the pace of transistor shrinkage will undoubtedly slow due to the absolute physical limit of Moore's Law, or the thermodynamic limit of required power (2013). Rasgon et al. thus concluded that the minimum feature size of a transistor has to be above 1.5 nm, compared to the current size of 14 nm, which reduces the time horizon of Moore's Law to approximately the year of 2030 (2013). Hence, if we assume the physical limit of transistors to be decisive for the continuity of Moore's Law, the price performance relationship of information-enabled technology can continue to improve during approximately 15 more years. However, that is with a doubling time of two years, as Gordon Moore himself observed, and not an annual doubling pattern as Ismail assumes. Moreover, there are several challenges for engineers to achieve the previously mentioned minimum size of transistors (Rasgon et al., 2013). Material challenges, as well as test and defect detection challenges amongst others need to be overcome in order to achieve the minimum transistor size that enables the effects of Moore's Law to survive until 2030 (Rasgon et al., 2013). Hence, from a technical standpoint, Moore's Law is over.

Nevertheless, it might be economics, and not physics, that limit the survival of Moore's Law. The capital constraint consists of manufacturers currently delivering a steady improvement in performance, but at increasing costs. End markets cannot absorb these cost

increases, and as such, the industry projects squeezed margins. (Rasgon et al., 2013) Thereby, the microprocessor industry is unlikely to continue to deliver a doubling pattern in price performance, since it is not profitable for manufacturers to continue such a development. Hence, information-technology is unlikely to continue to become cheaper nor decrease in costs as Ismail assumes. The author seems to have dismissed the physical limitations of transistors or capital constraints for the microprocessor industry at all when assuming continued improvements in the price performance relationship of information-enabled technologies.

If economics is the primary limiting factor for the continuity of Moore's Law, how does the business world discuss the matter? Let us turn to The Economist, a global new magazines with roots in the U.K. Moore's Law was discussed in The Economist's issue of Technology Quarterly and in their science and technology podcast Babbage in March this year. In both instances, it was concluded that Moore's Law is coming to an end. Last year, Gordon Moore himself predicted technical limits to cause Moore's Law to end in 2025 (Technology Quarterly, 2016). In addition, Intel has observed the doubling/halving to occur every two and a half year, not every second year (Babbage, 2016). In Babbage, it was discussed that Moore's Law has become a self-fulfilling prophecy, since the industry has poured huge amounts of money into keeping up with the predicted pace (2016). The three IT companies Samsung, Intel, and Microsoft together spent $ 37bn on research and development in 2015, of which a large proportion was dedicated to try to prolong the effects of Moore's Law or find ways to replace it (Technology Quarterly, 2016). As transistors have been shrinking in size, manufacturers have been required to redesign them and find new semiconductors. Therefore, the design costs of transistors have been drastically increased. Design costs are projected to $ 600m when the size of transistors decreases to 5 nm. That is three times the current design costs. (Technology Quarterly, 2016) Hence, the benefits of shrinking transistor sizes are not fully realized anymore, and integrated circuit manufacturers are struggling with increasing costs while being unable to pass on the cost increase to customers.

The trend of decreased benefits of shrinking the size of transistors will intersect with the trend of increasing costs, and when this happens, it will not be worthwhile to continue for industry players. One of the big capital constraints discussed in Babbage was the observation that every time there is an iteration of Moore's Law, the cost of factories and equipment increase as well. The cost increase is due to the increased complexity of manufacturing transistors and integrated circuits. The phenomenon has humorously been called Moore's Second Law, which states that the cost of a chip factory doubles roughly every fourth year. (Babbage, 2016) Today, the cost of an integrated circuit factory is approximately $ 5-6bn (Babbage, 2016), and thus Moore's Second Law projects the cost of integrated circuit factories to increase to approximately $ 20bn in a decade. That is an exponential cost increase of approximately 20 % per year. According to Rasgon et al. (2013) and Technology Quarterly (2016), manufacturers cannot shift this exponential cost increase on to customers, since prices would need to increase exponentially as well. When costs increase faster than revenue, capital constraints will result in manufacturers ending the development in transistor shrinkage we have seen in the past. Hence, from an economic standpoint, Moore's Law is over.

In this section, I discussed the first of Ismail's premises on which he bases the conclusion that a company can achieve and maintain exponential growth by applying his proposed organizational design. The premise stated that the continuity of Moore's Law will improve the price performance relationship of information-based technologies and hence enable any company to leverage technologies in order to achieve and maintain exponential output. The reader was presented with Ismail's claim that Moore's Law will continue and thus enable small teams as well as large corporations all over the world to leverage external resources. However, contradicting evidence on the continuity of Moore's Law was discussed. First, it was shown that absolute physical limits of transistors and engineering challenges to reach that limit will result in the end of Moore's Law within 15 years. Second, it was shown that capital constraints will result in the end of Moore's Law much sooner than the engineering challenges can be overcome. It can therefore be concluded that the price performance relationship of information-based technologies will not continue to improve in the same

manner as it has done in the past, thus not enable every company to leverage such technologies in order to achieve and maintain exponential output. Therefore, the premise is declared false.

### Summary

The first of three premises on which Ismail bases his conclusion that a company can achieve and maintain exponential growth by applying his organizational design was assessed in this section. According to Ismail, the output of ExOs grows exponentially due to the use of organizational techniques, such as staff on demand, community and crowd, and leveraged assets, that leverage accelerating technologies. Accelerating technologies are information-enabled technologies that Ismail claim will continue to become cheaper and less costly to put to use due to the effects of Moore's Law. Furthermore, Ismail claims that Moore's Law will continue and thus enable small teams as well as large corporations all over the world to access technologies in order to leverage external resources. Hence, being able to access technologies is thus a prerequisite for ExOs to leverage outsourcing and thus only maintain a small core of employees and assets while growing exponentially. However, evidence presented in this section show that capital constraints will put an end to the effects of Moore's Law within a decade. Thus, information-enabled technologies will not continue to become cheaper or less costly to put to use, resulting in implications for ExOs.

If it is so that information-enabled technologies are a prerequisite for ExOs to leverage outsourcing, and these technologies will not continue to be democratized, the act of outsourcing during growth will entail the same costs and issues for ExOs as for traditional organizations. Moreover, if it is so that information-enabled technologies are a prerequisite for ExOs to achieve and maintain exponential output by only maintaining a small core of employees, and these technologies will not become cheaper nor less costly, the organization of ExOs must grow in order to maintain exponential growth. Hence, the first premise being false has implications for the second as well as the third of the premises on which Ismail bases his conclusion that a company can achieve and maintain exponential growth by applying the organizational design of ExOs. These implications and premises will be discussed in the two following sections. However, the truth of Ismail's conclusion is

already questioned, since one of the premises has been declared false. The author attributes the possibility and success of ExOs mainly to the democratization of technologies, but the democratization of technologies will not continue. The idea that companies can achieve and maintain exponential growth by applying Ismail's organizational design can yet again be considered to be misleading. Without further due, let us turn to the assessment of Ismail's second premise.

### Outsourcing does not entail flexibility and minimized costs

In this section, I will discuss the second of Ismail's premises on which he bases the conclusion that companies applying the proposed organizational design will achieve and maintain exponential growth. The premise claims that the democratized technologies enable companies to leverage outsourcing, allowing enormous flexibility and minimized costs since exponentially growing companies can maintain a very small core of employees and assets while growing. The reader will be presented with Ismail's point of view on outsourcing, which can be summarized in the following statement. It is possible to outsource anything and everything, even mission critical business functions, thus allowing enormous flexibility and minimized costs. However, contradicting evidence on the effects of outsourcing for ExOs will be discussed. First, it will be shown that transaction costs and hidden costs associated with outsourcing will increase exponentially along with exponential growth. Thus, costs will not be minimized by outsourcing, conversely, margins will decrease and variable costs associated with outsourcing will decrease flexibility. Second, it will be shown that outsourcing entails loss of knowledge and decreased flexibility for ExOs. Therefore, the premise will be declared false, thus questioning whether a company can achieve and maintain exponential growth by applying Ismail's organizational design.

Let us examine why Ismail argues outsourcing to be essential for ExOs, and what assets and business functions the authors states ought to be outsourced. Outsourcing is essential since it enables companies to achieve great scalability, which is necessary in order to be able to grow exponentially (Ismail, 2014). ExOs achieve agility and flexibility while simultaneously minimizing costs by using mostly on-demand contractors in addition to a

small full-time core team and on-demand assets even in mission critical areas, while simultaneously outsourcing mission critical business functions (Ismail, 2014). Hence, Ismail concludes that the success of ExOs can largely be attributed to outsourcing and the concept of renting rather than owning (2014). Throughout the thesis, I will refer to outsourcing of business functions, renting assets, and using contractors simply as outsourcing. Furthermore, instances of offshoring will included in the term outsourcing.

Ismail explains that rather than owning assets or workforces, "/…/ ExOs leverage external resources to achieve their objectives." (Ismail, 2014, p. 45). As mentioned on page 26, Ismail states that individuals and small teams everywhere are being empowered by the mechanism of low-cost access to technology. The author elaborates on this statement by arguing that ExOs can move quickly and with a minimum of expense as they take advantage of democratized technologies and enjoy low overhead costs (Ismail, 2014). Hence, accessing democratized technologies enable ExOs to maintain only a small core team to manage the business, and therefore the overhead costs can be minimized. However, by claiming that ExOs leverage external resources while growing, Ismail takes for granted that suppliers grow exponentially in order to feed the ExO with inputs. Hence, it is rather the suppliers of ExOs that grow exponentially and not the ExO itself. Thus, the exponential increase in quantity is transferred from ExOs to suppliers, which in turn means that ExOs will not be able to grow unless their suppliers do. Thereby, a limitation to growth will be inherent in the supplier relationships of ExOs. Furthermore, by demanding of suppliers to become exponential, ExOs cannot control bottlenecks and sources of error while growing, which can become exponential in size as well. Moreover, a big question remains. What if every company applied the organizational design of ExOs, who would be left to supply all these companies? ExOs will win by outsourcing, but not everyone else, since Ismail expect external resources to happily and actively contribute to the output of ExOs.

Outsourcing enables ExOs to transform fixed costs into variable costs. Consequently, Ismail emphasizes agility and flexibility by recommending organizations to leverage external resources to perform even mission critical functions (2014). Hence, by only consisting of a small core team, ExOs are able to scale their business with near 100 %

variable costs (Ismail, 2014). Scaling a business by only incurring variable costs is beneficial since the need for money is largely reduced. In contrast to fixed costs, variable costs vary with production output and provide the organization with greater flexibility. If demand for a service or product increases, variable costs increase as well. Conversely, if demand for a service or product decreases, variable costs decrease as well. Companies with a large proportion of variable costs are therefore able to adjust corporate expenses according to the business cycle. When sales are low, production levels can be decreased and thus expenses are low as well. Ismail argues that an extremely low level of fixed costs is achievable even in traditional industries with normally high capital expenditures (2014). The author bases the argument on observations made during the research for the book and states that "/…/ it quickly became apparent how easy it is to outsource anything and everything." (Ismail, 2014, p. 62). Hence, Ismail argues outsourcing to enable ExOs to minimize costs in general, and transform fixed costs into variable costs. If we assume transformation of the majority of fixed costs into variable costs, some fixed costs will nonetheless burden the balance sheet, such as rent, equipment, and maintenance. These fixed costs will increase exponentially along with the exponential growth of ExOs. However, since it was shown in the previous section (page 30) that information-enabled technologies will not become cheaper nor less costly, ExOs cannot only consist of a small core team while growing. Thus, ExOs will not be able to scale their business at nearly 100 % variable costs as Ismail is claiming. Hence, fixed costs cannot be kept extremely low, but will grow exponentially along with the exponential growth of ExOs. In addition, since it was shown in the previous section that information-enabled technologies will not continue to be democratized, the act of outsourcing during growth will entail the same costs and issues for ExOs as for traditional organizations. These costs and issues will be examined in the remaining paragraphs of this section.

Variable costs associated with outsourcing will be incurred as ExOs grow exponentially, which entails that costs will not be minimized and flexibility will decrease. Transaction costs and hidden costs are variable costs that will increase exponentially as ExOs grow. First, we will examine transaction costs. Transaction costs are costs incurred by

participating in the market and thus making an economic exchange (Williamson, 1979). To outsource an activity or an asset is to make an economic exchange in the market, and outsourcing will thus incur transaction costs. The size of such costs are determined by the frequency, specificity, and uncertainty of the transaction, as well as the limited rationality and opportunistic behavior involved in making the transaction (Williamson, 1979). For companies that engage in outsourcing, transaction costs stem from searching for the right supplier, from contracting with that supplier, from controlling the supplier, and from potentially re-contracting with the supplier when changes are required (Hilmer & Quinn, 1994). Transaction costs incurred by outsourcing may exceed internal transaction costs of keeping the activity in-house under managements' control. When this is the case, the activity ought to be kept within the boundaries of the firm. Hence, it is essential to perform a cost-benefit analysis when considering outsourcing any activity. The analysis ought to include cost incurred from managing the insourced activity as well as transaction costs associated with external sourcing. (Hilmer & Quinn, 1994) However, Ismail never performed such an analysis and therefore assumes costs incurred from managing activities in-house to exceed the costs of outsourcing. This assumption is flawed, since ExOs will experience the same transaction costs, or even relatively higher transaction costs, compared to traditional companies. Let us examine what transaction costs incurred by outsourcing entails for ExOs.

Transaction costs are incurred when ExOs search for e.g. the right supplier of on-demand contractors. The supplier can be a global company with operations in several markets, but it can also be necessary to search for several companies or even for numerous individuals in order to cover markets. The more complex the search for contractors, the more transaction costs will be incurred. Similarly, the more complex the search for suppliers able to provide ExOs with mission critical business functions and on-demand assets, the more transaction costs will be incurred. Hence, the transaction costs incurred by ExOs searching for suppliers will be high due to the complexity of the search. Furthermore, transaction costs are incurred when ExOs design contracts with various suppliers. The outsourcing of mission critical business functions and on-demand assets in mission critical areas will

require extremely detailed contracts and confidentiality clauses to ensure that the activity is performed according to specification when required and to protect confidential information. Transaction costs incurred by ExOs designing supplier contracts are thus relatively higher compared to companies not outsourcing mission critical business function or assets. Similarly, when on-demand contractors handle client interactions, a detailed contract is required to ensure the quality of the interaction, thus increasing transaction costs for ExOs.

Moreover, transaction costs will be incurred when ExOs control suppliers for opportunistic behavior. The more mission critical the business function or on-demand asset and the larger the extent of client interaction, the more important it is that the supplier delivers according to contract. Thus, it is essential to control for opportunistic behavior for ExOs when outsourcing, resulting in increased transaction costs. In addition, transaction costs are incurred when it is necessary to redesign the contract during the outsourcing relationship. A redesign is necessary when the character of the outsourced activity is changed, when customer demand or any other circumstances are changed, or when any party is dissatisfied (Hilmer & Quinn, 1994). Since ExOs grow exponentially, the need to redesign contracts will be frequent, thus resulting in high transaction costs. Thus, due to the outsourcing of mission critical business functions and on-demand assets as well as the use of on-demand contractors, transaction costs associated with outsourcing will be high for ExOs. Furthermore, as ExOs grow exponentially, the number of transactions with suppliers will increase exponentially, and thus increase transaction costs exponentially. Hence, compared to traditional organizations, transaction costs incurred by outsourcing will be higher for ExOs and thus decrease flexibility.

To conclude, transaction costs are associated with all transactions, and since outsourcing is a transaction, ExOs leveraging outsourcing will be subjected to transaction costs. Since ExOs outsource mission critical business functions and on-demand assets as well as using on-demand contractors, the transaction costs for searching, contracting, controlling, and re-contracting will be higher than for traditional organizations. Furthermore, along with ExOs growing exponentially, the number of transactions with suppliers will increase exponentially as well. Hence, transaction costs associated with outsourcing are higher for

ExOs compared to traditional companies, and will increase exponentially along with ExOs growing exponentially. It is thus concluded that outsourcing does not enable exponentially growing companies to minimize costs due to the transaction costs incurred.

Let us now investigate the second part of variable costs associated with outsourcing, namely hidden costs. As mentioned on page 33, since information-enabled technologies will not continue to be democratized, the act of outsourcing during growth will entail the same costs and issues for ExOs as for traditional organizations. This includes hidden costs associated with outsourcing, which will be shown to be relatively higher for ExOs compared to traditional organizations. In PwC's 2007 Global Outsourcing Survey, it was found that decreased costs and gaining access to talent were the top reasons why firms outsource (PwC, 2007). Similarly, in a survey from 2007, Deloitte Consulting found outsourcing initiatives to be initially motivated by cutting costs, to simplify projects, and to tap expertise that was not found in-house (Deloitte, 2007). According to Ismail, the same reasons and motivations drive ExOs to outsource. However, what was found in both PwC's and Deloitte's survey was that the total costs were subsequently found to be much higher than originally projected.

According to Tadelis, whom investigated the resulting total costs, the drastically increasing costs were ascribed to unexpected complexity, lack of flexibility among outsource providers, and other unforeseen problems that added both costs and friction between the parties (2007). The unforeseen problems resulted in so called hidden costs (Tadelis, 2007). Additional expenses incurred by managing outsourcing relationship are often referred to as hidden costs of outsourcing (Narayanan, Jayaraman, Luo & Swaminathan, 2011; Overby, 2003; Sanders, Locke, Moore & Autry, 2007). Such additional expenses mainly consist of the scope of work along with the direct costs of managing the outsourcing relationship, and most importantly the transfer of knowledge from the buying party to the outsource provider (Tadelis, 2007). The hidden costs hence consist of direct and indirect costs associated with managing the relationship with a supplier. In more detail, hidden costs include control costs and coordination costs originating from the aim to mitigate behavioral risk and address performance risk (Handley & Benton Jr., 2013). Control costs consist of the time, effort,

and resources associated with managing and monitoring contracts (Barthélemy, 2003; Dibbern, Winkler & Heinzl, 2008; Sanders et al., 2007). Coordination costs consist of costs incurred from integrating information and processes across organizational boundaries (Clemons, Reddi & Row, 1993; Crowston, 1997). Let us examine what hidden costs associated with outsourcing entails for ExOs.

ExOs will need to mitigate behavioral risks associated with outsourcing mission critical business functions and assets as well as using on-demand contractors. Hence, time, effort, and resources, such as monitoring devices, must be devoted to manage and monitor supplier contracts. Since ExOs have to manage and monitor numerous contracts, the control costs will be high. Furthermore, as ExOs grow exponentially and the number of on-demand contractors or other types of outsourcing relationships increase exponentially, control costs will increase exponentially. Moreover, ExOs will need to address performance risks associated with outsourcing mission critical business functions and assets as well as using on-demand contractors. In order to integrate and link their resources with suppliers, ExOs will need to share forecasts and schedules, use standardized information systems, and rely on personal or group interaction with suppliers. Since ExOs have to integrate information and processes with numerous suppliers, coordination costs will be high. Furthermore, as ExOs grows exponentially and the number of on-demand contractors or other types of outsourcing relationships increase exponentially, coordination costs will increase exponentially.

In addition, along with ExOs growing globally, the need to manage relationships with suppliers based on various continents will increase. According to Tadelis, offshoring entail "/…/ extra management time needed to maintain relationships that span both geographic and cultural distances." (Tadelis, 2007, p. 265). Hidden costs associated with managing outsourcing relationships have been found to amplify in complex, globally distributed outsourced services (Aron & Singh, 2005; Cioni, 2007). Hence, the growth of ExOs entails increased control and coordination costs, since ExOs will need to outsource complex, mission critical business functions to a globally distributed supplier network. In addition, communication and interpretation issues will aggravate due to time lags and differences in

languages as well as cultures, thus incurring increased coordination costs. Hidden costs will therefore increase as ExOs grow globally, and increase exponentially due to the exponential growth rate of ExOs.

To conclude, hidden costs are associated with all outsourcing relationships, and such costs have been shown to be relatively higher for ExOs compared to traditional organizations, thus decreasing flexibility for ExOs. Furthermore, as the number of contracts ExOs have to manage increases exponentially, control costs will increase exponentially as well. Moreover, as the number of suppliers ExOs have to integrate information and processes with, coordination costs will increase exponentially as well. In addition, control and coordination costs will increase further as ExOs expand internationally. Hence, hidden costs will increase exponentially along with ExOs growing exponentially. It is thus concluded that outsourcing does not enable exponentially growing companies to minimize costs due to the hidden costs incurred. From the dynamics of costs, let us turn to Ismail's claim that outsourcing entails flexibility for ExOs.

In addition to minimize costs, Ismail claims that outsourcing allows ExOs to achieve flexibility by only focusing on areas in which they are really outperforming. Hereby, even mission-critical business functions and on-demand assets in mission critical areas are argued to be better handled by experts. (Ismail, 2014) Ismail claims that capabilities can be controlled at a distance and therefore ExOs do not have to build them internally, "/…/ given that the control mechanisms offered by software and the Internet allow the management of these capabilities at a distance, why build your own?" (Ismail, 2014, p. 137). From Ismail's discussion on only focusing on areas in which ExOs are outperforming competition, it can be inferred that the author is referring to building core competencies while relying on outsourcing in all other areas. Therefore, I want to introduce the reader to the concept of core competencies.

Prahalad and Hamel, whom introduced the concept, described core competencies as what the company can do better than anyone else, i.e. what distinguishes a company in the marketplace (1990), and they tend to be sets of skills that cut across traditional functions (Quinn & Hilmer, 1994). These sets of skills need to fulfill three criteria in order to be core

competencies. First, they need to provide potential access to a wide variety of markets. Second, they need to make a significant contribution to perceived customer benefits of the company's product. Third, the skills need to be difficult to imitate by competitors. (Prahalad & Hamel, 1990) The core competencies provide the organization with its uniqueness, competitive edge, and basis of value creation for the future. Hence, examining what constitutes the organization's core competencies is crucial, and these sets of skills ought to be kept in-house since they define the organization and its essential reason for existence. (Quinn & Hilmer, 1994) Hereby, Ismail's claim that ExOs ought to outsource anything and everything, except core competencies, sounds reasonable.

However, it is not that simple. In their research, Quinn and Hilmer found that companies must avoid outsourcing any core competencies or giving suppliers access to critical knowledge or skills that underpin these competencies (1994). Ismail does not discuss how ExOs ought to examine what constitutes the company's core competencies; the author simply states that ExOs ought to outsource everything in which they are not outperforming competition. Hence, there is a risk that ExOs give suppliers access to critical knowledge or skills that underpin core competencies. Thereby, ExOs bases of value creation for the future will be lost to suppliers.

In addition, Quinn and Hilmer recommended companies to perform some activities where they are not outperforming, "/…/ just to keep existing or potential competitors from learning, taking over, eroding, or bypassing elements of its special competencies." (Quinn & Hilmer, 1994, p. 55). Since ExOs are outsourcing everything, including mission critical business functions and on-demand assets in mission critical areas, a risk exists that suppliers learn, take over, erode, or bypass elements of ExOs' core competencies. Furthermore, outsourcing entails transfer of knowledge to suppliers. When ExOs outsource mission critical business functions and on-demand assets, they lose knowledge about these functions and assets. Moreover, when ExOs use on-demand contractors, the knowledge they possess and create in interactions with each other and with customers is lost. As a result, suppliers will gain greater bargaining power and start controlling the outsourcing relationship, resulting in decreased flexibility for ExOs. Hence, ExOs will lose knowledge

and flexibility by outsourcing everything and only maintaining a small core of employees and assets. Furthermore, losing control over a supplier can result in the supplier attempting to bypass the ExO directly in the marketplace, which entails the end of the ExO.

In addition to loss of knowledge, outsourcing can entail loss of competencies. According to Quinn and Hilmer, outsourcing entails the potential loss of critical skills or developing the wrong skills if the company does not assess what long-term competencies will be needed (1994). When ExOs are outsourcing everything except the core competencies currently needed, critical skills will be lost and the wrong skills will be developed. Along with growing exponentially, the sets of skills that will be required will change, but since ExOs have relied on outsourcing and not developed any long-term competencies, they will not be able to adapt to the new conditions. The activity of outsourcing mission critical business functions and on-demand assets as well as using on-demand contractors will hence result in decreased flexibility for ExOs.

In this section, I discussed the second of Ismail's premises on which he bases the conclusion that companies applying the proposed organizational design will achieve and maintain exponential growth. The premise claimed that the democratized technologies enable companies to leverage outsourcing, allowing enormous flexibility and minimized costs since exponentially growing companies can maintain a very small core of employees and assets while growing. The reader was presented with Ismail's point of view on outsourcing, including the outsourcing of everything except a small core of employees and assets. Contradicting evidence on the effects of outsourcing for ExOs was discussed. First, it was shown that transaction costs and hidden costs associated with outsourcing were high for ExOs relative to traditional organizations, and increased exponentially along with exponential growth. Thus, outsourcing will not minimize costs for ExOs, conversely, margins will decrease, and variable costs associated with outsourcing will decrease flexibility. Second, it was shown that outsourcing entails loss of knowledge and decreased flexibility for ExOs. Therefore, the premise is declared false, thus questioning whether a company can achieve and maintain exponential growth by applying Ismail's organizational design.

## Summary

The second of three premises on which Ismail bases his conclusion that a company can achieve and maintain exponential growth by applying his organizational design was assessed in this section. According to Ismail, ExOs achieve agility and flexibility while simultaneously minimizing costs by using mostly on-demand contractors in addition to a small full-time core team and on-demand assets even in mission critical areas, while simultaneously outsourcing mission critical business functions. Furthermore, the author argues that ExOs can move quickly and with a minimum of expense as they take advantage of democratized technologies and enjoy low overhead costs. However, since it was shown in the previous section (page 30) that information-enabled technologies will not become cheaper nor less costly, ExOs cannot only consist of a small core team while growing. Hence, ExOs will not be able to scale their business at nearly 100 % variable costs as Ismail is claiming. Hence, fixed costs cannot be kept extremely low, but will grow exponentially along with the exponential growth of ExOs. Thus, ExOs will not be able to move quickly and with a minimum of expense.

In addition, since it was shown in the previous section (page 30) that information-enabled technologies will not continue to be democratized, the act of outsourcing during growth will entail the same costs and issues for ExOs as for traditional organizations. It was found that the variable costs associated with outsourcing, transaction costs and hidden costs, were higher for ExOs relative to traditional organizations. Furthermore, it was shown that these costs will increase exponentially as ExOs grow. Thus, it was shown that outsourcing will not result in minimized costs for ExOs, but rather increased variable costs and hence reduced flexibility.

Moreover, it was shown that when ExOs outsource mission critical business functions and on-demand assets, they lose knowledge about these functions and assets. Furthermore, when ExOs use on-demand contractors, the knowledge the contractors possess and create in interactions with each other and with customers is lost. Hence, outsourcing results in knowledge losses for ExOs, and thus suppliers will gain greater bargaining power and start controlling the outsourcing relationship, resulting in decreased flexibility for ExOs.

As mentioned on page 30, the organization of ExOs must grow in order to maintain exponential growth. Furthermore, if ExOs want to prevent decreased flexibility and knowledge loss, they need to allow the organization to grow along with the growth of the business. Hence, the first and the second premises being false have implications for the third and final premise on which Ismail bases his conclusion that a company can achieve and maintain exponential growth by applying the organizational design of ExOs. This implication and premise will be discussed in the following sections. However, the truth of Ismail's conclusion is already questioned, since two of the premises have been declared false. The author attributes the success of ExOs to outsourcing and the concept of renting rather than owning, but outsourcing entails decreased flexibility and knowledge loss for ExOs. The idea that companies can achieve and maintain exponential growth by applying Ismail's organizational design can yet again be considered to be deceptive. Without further due, let us turn to the assessment of Ismail's third and final premise.

### Internal limitations will limit the rate of growth

In the following paragraphs, I will discuss the third and final of Ismail's premises on which he bases the conclusion that companies applying the proposed organizational design will achieve and maintain exponential growth. The premise states that there will be no internal limitations to grow exponentially and maintain that growth for companies applying the organizational design and simultaneously leveraging technologies. The reader will be presented with the resource-based view of firms in order to enable an analysis of limitations to growth embedded within ExOs. Ismail claims that the only limitation to growth of ExOs is the scalability of their businesses. However, contradicting arguments will be discussed. First, it will be shown that perceptions, abilities and entrepreneurial spirit among the employees of ExOs will be limiting the rate of growth. Second, it will be shown that the capacity and the experience of existing management personnel of ExOs will be limiting the rate of growth. Therefore, the premise will be declared false, thus considerably questioning whether a company can achieve and maintain exponential growth by applying Ismail's organizational design.

Ismail argues that ExOs will outperform traditional companies, since ExOs leverage information-based technologies and external resources to achieve exponential growth (2014). Furthermore, the author is convinced that ExOs will continue to grow exponentially without any limit or limitations to growth (Ismail, 2014). "It is our firm belief that ExOs will overwhelm traditional linear organizations in most industries because they take better advantage of the information-based externalities inaccessible to older structures, a feat that will empower them to grow faster- shockingly faster- than their linear counterparts, and then accelerate from there." (Ismail, 2014, p. 45-46). In the section about exponential functions, page 20, the reader was presented with evidence showing that limits to growth indeed exists, such as access to resources and saturated markets. External limitations to growth are important to consider, however, companies can never control such limitations. The focus of this thesis is primarily internal, due to the research question being concerned with organizational design, and the discussion will therefore focus on limitations that companies can influence. It was concluded on page 30 that the organization of ExOs must grow in order to maintain exponential growth, since technologies will not become cheaper nor less costly. Furthermore, it was concluded on page 41 that ExOs need to allow the organization to grow along with the growth of the business in order to prevent decreased flexibility and knowledge loss. These conclusions questions the validity of Ismail's claim that there will be no internal limitations to growth for ExOs. To develop this argument further, the internal limitations to growth need to be specified more clearly.

As mentioned on page 2, Ismail argues that how companies organize can be the key growth, which in turn is key for performance (2014). Furthermore, on page 38, the reader was presented with Ismail's assertion that ExOs only have to build a few capabilities in-house, since information-technology allows them to control outsourced capabilities held by experts. Hence, I infer that Ismail's view of the firm corresponds to the resource-based view (RBV) of the firm, from which the firm is seen as a bundle of resources and capabilities. Furthermore, as presented in the previous paragraph, it has been concluded that ExOs need to hire additional employees along with growth in order to prevent knowledge loss. Hence, employees are seen as resources and their skills as capabilities that can be used

in production. Moreover, this perspective corresponds to my practical and academic experiences, of which I have learned that it necessary to discuss companies not simply as a mechanisms that turns input to output, but as entities constituting of human beings that apply their skills and knowledge to achieve a certain outcome. It is human beings and their knowledge that invent technologies and decides what the technology will perform. Similarly, it is human beings that interact with suppliers and technologies are merely tools for that interaction. Hence, I argue that human beings are what will be decisive for the performance of companies, not technology or organizational techniques such as outsourcing. The internal limitations to growth for ExOs will therefore be analyzed from a RBV perspective.

First, let us turn to a short overview of the concept. In pursuit of explaining firm performance and the determinants of strategic choice, a resource-based view of the firm has been developed by several scholars throughout the 20th century (Coase, 1937; Penrose, 1959; Nelson and Winter. 1982; Teece, 1982; Rumelt, 1984; Wernerfelt, 1984; Barney, 1986a, 1986b, 1991a, 1991b; Dierickx and Cool, 1989; Teece, Pisano, and Shuen, 1990; Conner, 1991; Peteraf, 1993). RBV is different from industry analysis, such as Porter's five forces framework developed in 1979, 1980 and 1985, in that it argues the decisiveness of a firm's resources and capabilities on the profitability of the firm (Amit & Schumaker, 1993). When describing a firm according to RBV, the observer sees a unique bundle of distinctive resources and capabilities (Grant, 1996). Resources are "/…/ stocks of available factors that are owned or controlled by the firm." (Amit & Schumaker, 1993, p. 35), which are subsequently converted into final products or services. For instance, information technology and human assets are resources that can be owned or controlled by companies. Capabilities, on the other hand, can be defined as "/…/ a firm's capacity to deploy resources /…/ using organizational processes, to effect a desired end." (Amit & Schumaker, 1993, p. 35). For instance, the ability to develop and deliver a customized product is a capability. Capabilities are information-based, intangible or tangible processes that are specific to the firm, since they have been developed over time through the multifaceted interactions of the firm's resources (Amit & Schumaker, 1993). For instance, technology

and customer knowledge within the company have interacted to develop into the capability of offering customized products.

To maximize firm profitability, the emphasis of management ought to be the deployment of existing resources and capabilities, as well as developing the firm's future resource base (Grant, 1996). Thus, decisions made and actions taken by a company's management today will be decisive for the company's future capabilities. Barney (1991a, 1991b; 1996) argued that in order to achieve superior profitability through sustained competitive advantage, a firm's resources and capabilities ought to be valuable, rare, and imperfectly imitable. Furthermore, how the firm organizes will determine if it is able to absorb and apply the resources and capabilities (Barney, 1996; 2002). In summary, ExOs can be viewed as unique bundles of resources and capabilities that enable them to leverage external resources and capabilities and thus grow exponentially. Every ExO is hereby perceived as consisting of its unique bundle of resources and capabilities, which can be valuable, rare, and imperfectly imitable.

However, RBV has been widely adopted and researched, but also criticized (Priem & Butler, 2001; Collins, 1994; Gibbert, 2006; Fiol, 1991; Conner, 1991; Armstrong & Shimizu, 2007). Kraaijenbrink, Spender, and Groen (2009) made an analysis of eight overarching points of critique on RBV and concluded that the concept cannot withstand three of these critiques. Therefore, Kraaijenbrink et al. propose that the way forward is to move RBV "/…/ into an inherently dynamic and subjective framework such as Penrose's /…/" (Kraaijenbrink et al., 2009, p. 350). Kraaijenbrink et al. refers to Edith Penrose, whom was active during the 20th century, but her publications still being considered relevant today. During recent years, Penrose's theory of the growth of the firm from 1959 has "/…/ been used as the basis of integrating and extending the now flourishing literature on strategic entrepreneurship." (Penrose, 2009, p. X). Penrose attempted to construct a general theory of the growth of firms, and was thus concerned with growth to which size is just a by-product of the process of growth (2009). For the organizational design proposed by Ismail, size is just a by-product of growth, since the objective is to increase output

regardless of size. I therefore find Penrose's general theory of the growth of firms valuable in order to examine limitations to growth embedded within the ExO itself.

According to Penrose, a firm's internal resources, its routines, and the experience of the management will be decisive for the output of the firm and thus limit the rate of growth (2009). For generalizability, let us assume that the internal resources of ExOs consist of employees. Furthermore, let us assume that the employees are knowledge workers, and that the routines of ExOs therefore concern how employees put their mind to work. Thereby, the employees of ExOs, the capacity of management and the experience of management managing ExOs are limitations embedded within the ExO itself. First, we will examine the role of employees in limiting the rate of growth.

The *productive opportunity* of firms include all of the productive possibilities that its workforce sees and can take advantage of, and it governs the productive activities of firms. Even though it is assumed that the firm is eager and willing to find such opportunities, the perception of the workforce and its ability to take advantage of what it sees will be decisive for the productive activities of the firm. (Penrose, 2009) Hence, perceptions and abilities of the employees of ExOs constitutes limitations to growth. Opportunities to grow must be perceived by an employee, whom must communicate that opportunity to the rest of the ExO. Thereafter, someone within the ExO must have the ability to exploit the opportunity and take action. As such, perceptions and abilities of the employees of ExOs will determine what activities the ExO will undertake. Productive possibilities can thus exist, but not be turned into productive activities. Hence, information-based technologies and external resources can be accessible to ExOs, but the inability of the core team to turn opportunities in the market to actions within the ExO will limit the rate of growth.

As mentioned in the previous paragraph, for the productive opportunity of ExOs to turn into productive activities, someone within the ExO must take action. Penrose called taking action the spirit of entrepreneurship of the firm. Before action can be undertaken, the firm must commit effort and resources to a risky activity, and support individuals in doing so (Penrose, 2009). The spirit of entrepreneurship of the firm will thus be decisive for a general entrepreneurial bias in favor of growth (Penrose, 2009). As such, growth will be

limited by "/…/ an entrepreneurial decision requiring entrepreneurial intuition and imagination /…/" (Penrose, 2009, p. 31). Hence, the entrepreneurial spirit of the individuals constituting ExOs, both employees and decision-makers, will be a limitation to growth and the rate of growth. If the individuals of the ExO lack entrepreneurial intuition and imagination, no entrepreneurial decisions will be made and thus growth will not be favored. Lacking entrepreneurial spirit at any level will hence make it difficult for the ExO to engage the firm in productive activities. If managers lack entrepreneurial spirit, employees will not be supported in committing effort and resources to a risky activity, most often resulting in the employee not engaging in that activity. Similarly, if employees lack entrepreneurial spirit, they will not commit effort and resources to a risky activity, independently of managers having entrepreneurial spirit. The entrepreneurial spirit of ExOs will thus be decisive for the output of ExOs, and hence limit the rate of growth.

According to Penrose, if there is a lack of interest at any level of the organization to engaging in new activities or geographical areas, no leadership can overcome that internal resistance (2009). Penrose thus argued that "/…/ the managerial competence of a firm is to a large extent a function of the quality of the entrepreneurial services available to it." (2009, p. 32). Hence, the managerial competence of ExOs will depend on the willingness among employees to take action on opportunities in the market. If any resistance to growth exists, it will be difficult to continue growing exponentially. To summarize, it has been concluded that the employees of ExOs will be decisive for the output of ExOs and thus constitute a limitation to the rate of growth. Let us turn to the experience of the management as a limitation to growth.

Similar to Ismail, Penrose investigated the case for firm growth on the presumption that "/…/ there is no rigid external barrier to its expansion /…/" (Penrose, 2009, p. 39). Furthermore, both authors made the presumption that the supply of capital, labor, or management is not absolutely fixed, "/…/ that there is not an effective limit to the amount of any kind of productive resource that the firm can obtain at a price /…/" (Penrose, 2009, p. 39). However, while Ismail claims that the rate of growth is only limited by the

scalability of the company, Penrose argue that there is a managerial limit to the growth of a firm.

According to Penrose, the limit lies in the existing responsible managers of the firm, whom need to know and approve of, at least on a high level, plans and operations of the firm. As an administrative and planning organization, the firm therefore cannot take advantage of *all* opportunities for profitable production open to the individual firm. (Penrose, 2009) Hence, the physical maximum of the number of things any individual can do will be decisive for the growth of the firm. Penrose argued that "/…/ the capacities of the existing managerial personnel of the firm necessarily set a limit to the expansion of that firm at any given period of time, for it is self-evident that such management cannot be hired in the market-place." (Penrose, 2009, p. 41). Managerial services can indeed be bought in the marketplace, but ExOs cannot purchase such services and expect them to be efficiently employed in expansion at any point of time. The management of an ExO has experience from working together and from collectively managing the organization, and such experience cannot be bought on the market. Hence, when ExOs need to hire additional management personnel, the physical maximum of things the existing management can do will limit the rate at which newly hired personnel can gain the requisite experience, as they need to be taught by existing management.

Moreover, in order for a management team to plan extensively, co-operation and confidence in each other is necessary (Penrose, 2009). Therefore, Penrose argued that experience within a given group is a capability that cannot be bought on the market, and that such a capability takes time to develop since it requires knowledge about co-workers, methods of the firm, and best practice in the particular set circumstances in which they are working (2009). Hence, the amount of experienced management personnel constitutes a limitation to growth at any time for ExOs. Therefore, Penrose claimed that "/…/ if a firm deliberately or inadvertently expands its organization more rapidly than the individuals in the expanding organization can obtain the experience with each other and with the firm that is necessary for the effective operation of the group, the efficiency of the firm will suffer, even if optimum adjustments are made in the administrative structure /…/" (Penrose, 2009,

p. 43). Hence, while ExOs are growing exponentially they will need additional management personnel, it will however be difficult for ExOs to develop the necessary managerial capabilities in the same pace. In order to develop the managerial capability, new management personnel must gain knowledge about the employees of the ExO, of the organizational techniques, the information-technologies used, the outsourcing relationships managed etc. Furthermore, the newly expanded management team must interact and cooperate in order to have confidence in each other. Gaining such knowledge and experience requires time. However, ExOs are growing exponentially and thus more rapidly than the individuals of the ExO can obtain the required knowledge and experience. After all, human beings do not function in an exponential manner. Therefore, the efficiency of the firm will decrease, and thus the rate of growth will decrease as well. When a company is growing exponentially, it is difficult to increase the number of managers needed to manage the company efficiently. Hence, management personnel will limit the output of ExOs and thus constitute a limitation to exponential growth.

In this section, I discussed the third and final of Ismail's premises on which he bases the conclusion that companies applying the proposed organizational design will achieve and maintain exponential growth. The premise stated that there will be no internal limitations to grow exponentially and maintain that growth for companies applying the organizational design and simultaneously leveraging technologies. The reader was presented with the resource-based view of firms in order to enable the analysis of limitations to growth embedded within ExOs. Ismail claims that the only limitation to growth of a company is the scalability of its business. However, contradicting arguments was discussed. First, it was shown that perceptions, abilities and entrepreneurial spirit among the employees of ExOs will be limiting the rate of growth. Second, it was shown that the capacity and the experience of existing management personnel of ExOs will be limiting the rate of growth. Therefore, the premise is declared false, thus considerably questioning whether a company can achieve and maintain exponential growth by applying Ismail's organizational design.

## Summary

The third and last premise on which Ismail bases his conclusion that a company can achieve and maintain exponential growth by applying his organizational design was assessed in this section. Ismail claims that there will be no internal limitations to growth for ExOs, since they overcome these limitations by leveraging information-based technologies and outsourcing. As such, ExOs are able to maintain a very small core of employees and assets, and thus achieve and maintain great scalability. Therefore, the author claims that ExOs will overwhelm traditional linear organizations in most industries by growing exponentially. However, it was concluded on page 30 that the organization of ExOs must grow in order to maintain exponential growth, since technologies will not become cheaper nor less costly. Furthermore, it was concluded on page 41 that ExOs must allow the organization to grow along with the growth of the business in order to prevent decreased flexibility and knowledge loss. Hence, it can be concluded that internal limitations to growth cannot be overcome. Hereby, ExOs cannot maintain a small core of employees and thus not achieve and maintain the scalability Ismail claims ExOs to have. The implications for growth was discussed in an analysis of limitations to growth embedded within ExOs.

The analysis showed that information-based technologies and external resources can be accessible to ExOs, but the inability of the core team to turn opportunities in the market to actions within the ExO will limit the rate of growth. Furthermore, the managerial competence of ExOs will depend on the willingness among employees to take action on opportunities in the market. If any resistance to growth exists, it will be difficult to continue to grow exponentially. Moreover, when ExOs need to hire additional management personnel, the physical maximum of things the existing management can do will limit the rate at which newly hired personnel can gain the requisite experience, as they need to be taught by existing management. In addition, when a company is growing exponentially, it is difficult to increase the number of managers needed to manage the company efficiently. After all, human beings do not function in an exponential manner. I therefore argue that human beings are what will be decisive for the performance of companies, not technology or organizational techniques such as outsourcing. Thus, the internal limitations to growth

will limit the rate of growth of ExOs, making it very hard to achieve exponential growth, no matter the organizational design.

Due to the internal limitations to exponential growth presented here, and the external limitations to exponential growth, such as limited access to resources or saturated markets presented on page 20-22, it can be concluded that companies cannot achieve and maintain exponential growth by applying Ismail's organizational design. The use of organizational techniques that enable companies to leverage technologies do not overcome internal and external limitations to growth, and therefore companies will not be able to achieve and maintain exponential growth.

## A company cannot achieve nor maintain exponential growth by applying the organizational design proposed by Ismail

I have answered the research question of this thesis by dissecting Ismail's conclusion stating that a company can grow exponentially and maintain such growth by applying the organizational design proposed by Ismail. The author claimed to have used a deductive research approach to arrive at his conclusion, and therefore the argument was treated accordingly.

Ismail based his conclusion of three premises. First, the continuity of Moore's Law will improve the price performance relationship of information-based technologies and hence enable any company to leverage technologies in order to achieve and maintain exponential output. Second, the democratized technologies enable companies to leverage outsourcing, allowing enormous flexibility and minimized costs since exponentially growing companies can maintain a very small core of employees and assets while growing. Third, there will be no internal limitations to grow exponentially and maintain that growth for companies applying the organizational design of ExOs and simultaneously leveraging technologies.

One by one, I investigated the validity of these premises. The analysis showed that a company cannot achieve and maintain exponential growth by applying Ismail's

organizational design. Evidence showed that Moore's Law will not continue, and therefore the price performance relationship of technologies will not improve and thus not enable every company to leverage technologies to achieve exponential output. Furthermore, evidence showed that outsourcing does not result in flexibility and minimized costs for exponentially growing companies, and therefore these companies cannot maintain a very small core of employees and assets while growing. Thereby, the two fundamental drivers of the scalability of ExOs were concluded to be absent. Hence, internal limitations to growth cannot be overcome by applying the organizational design proposed by Ismail, and therefore the rate of growth will be limited, making it impossible to achieve exponential growth. In addition, the analysis showed that due to external limitations to growth, exponential growth is just a short-term transient phenomenon. Hereby, it is concluded that a company cannot achieve and maintain exponential growth by applying Ismail's organizational design.

## Critique on the research method of Exponential Organizations

In the previous paragraph, I concluded Ismail's conclusion stating that a company can achieve and maintain exponential growth by applying the organizational design of ExOs to be based on false premises and thus being false. I based my conclusion on evidence, facts and research from scholars and academics whom figures in my reality. Hence, it is as the collective knowledge of my reality and the collective knowledge of Ismail's reality lead to contradictory outcomes. How can it be that Ismail was convinced that companies can achieve and maintain exponential growth by applying the organizational design he proposes? Let us turn to the research method of *Exponential Organizations* to search for an answer.

Ismail researched and framed the key ideas for the book during three years up until printing. The author states to "/…/ have been seriously researching the exponential organization model for the last three years." (Ismail, 2014, p. 21). The author's research method included the following.

Ismail “Reviewed sixty classic innovation management books by such authors as John Hagel, Clayton Christensen, Eric Ries, Gary Hamel, Jim Collins, W. Chan Kim, Reid Hoffman and Michael Cusumano.” (Ismail, 2014, p. 21). These innovation management scholars and thinkers as well as business theorists have a lot in common. They are all North American or European males with educational backgrounds from the Ivy League universities in the U.S., as well as prominent European universities, such as Oxford University in Great Britain and INSEAD in France. Hence, the insights from reviewing these books originates from the Western hemisphere, thus not representing other parts of the world. Furthermore, only reviewing books can bias the insights towards ideas that promise extraordinary results within a short timeframe. Unlike authors of scientific articles, authors of management books receive financial compensation corresponding to the number of books sold. Thus, in order to sell numerous copies, authors of management books tend to promise more than they can keep.

Furthermore, Ismail “Interviewed C-Level executives from several dozen Fortune 200 companies with our survey and frameworks.” (Ismail, 2014, p. 21). Companies on the Fortune 200 list are operating in the U.S. and file financial statements with a U.S. government agency. The lists consists of the 200 largest companies with such characteristics, ranked by total revenues per respective fiscal year. (Fortune, a) Hence, the interviewees only represented large companies operating in the U.S., thus not representing other parts of the world. Furthermore, the interview questions were based on the framework of ExOs. The design of the questions and the interviewer himself were therefore aiming at confirming the framework rather than producing an objective picture of organizational design and growth, thus constituting a source of bias.

Moreover, Ismail “Interviewed or researched ninety top entrepreneurs and visionaries including Marc Andreessen, Steve Forbes, Chris Anderson, Michael Milken, Paul Saffo, Philip Rosedale, Arianna Huffington, Tim O’Reilly and Steve Jurvetson.” (Ismail, 2014, p. 21). These entrepreneurs and visionaries are all from the Western hemisphere, born and operating in U.S. or Western Europe. Hence, the interviewees only represented a small part of the world, biasing the results towards western companies and cultures. Furthermore,

collecting insights from entrepreneurs and visionaries can be inspirational, but does not produce scientifically proven results. These interviews ought therefore to be considered as personal, subjective reflections and not as objective evidence.

In addition, Ismail "Investigated the characteristics of the one hundred fastest growing and most successful startups across the world, including those that comprise the Unicorn Club (Aileen Lee's name for the billion-dollar market cap startup group), to tease out commonalities the companies used to scale." (Ismail, 2014, p. 21). The Unicorn Club consists of "U.S.-based software companies started since 2003 and valued at over $1 billion by public or private market investors." (Aileen Lee, Tech Crunch, 2013). Hence, the result of Ismail's investigation of how to scale a company is based on North American software companies only. Having a business model based on software is totally different from a business model based on producing physical products or services. Thus, the investigation on scalability will be biased towards software companies only.

Finally, the author "Reviewed presentations and gleaned key insights from core faculty members at Singularity University regarding the acceleration they are seeing at the edges of their fields and how that acceleration might impact organizational design." (Ismail, 2014, p. 22). Ismail is the founding Executive director at Singularity University and moderates several of the university's academic programs (Ismail, 2014). Hence, the author collected insights from his own institution in which Ismail influences the curriculum to large extent. Thus, the insights from the review will be biased. Singularity University is a non-degree institution situated on the grounds of the NASA Research Park in Silicon Valley, California, U.S. (Singularity University, a). It provides educational programs, innovative partnerships and a startup accelerator to help everyone that asks to understand cutting-edge technologies, as well as how to utilize these technologies to positively affect billions of people. (Singularity University, a) Singularity University's mission is to educate, inspire and empower a global community of leaders to leverage exponential technologies to develop solutions to humanity's most difficult challenges. (Singularity University, b) Hence, Ismail reviewed material produced by a non-degree institution which purpose is to convey the same idea and promise as the author is doing in *Exponential Organizations*.

Furthermore, the insights are created in an environment highly influenced by companies and organizations located in Silicon Valley, of which the majority is engaged with software and technology. Thus, Ismail's review was subject to confirmation bias.

My reflection on the research method of *Exponential Organizations* is that Ismail has based his idea of ExOs on a study restricted to the environment of Silicon Valley and the software industry. The author searched for, interpreted, and focused on evidence that confirmed his preconceptions, making his research subject to confirmation bias. Ismail's reasoning is therefore inductive rather than deductive, making broad generalizations based on specific observations that were considered patterns based on biased research. However, Ismail never tested his hypothesis on a broad sample, nor did he test an antithesis on a sample of companies from a different environment and different industry, and thus the hypothesis was never scientifically confirmed. *Exponential Organizations* is thus descriptive for a restricted environment and industry rather than prescriptive for a global environment and every industry. It is thereby not too strange that the application of the collective knowledge of my community resulted in a dismissal of Ismail's conclusion stating that a company can achieve and maintain exponential growth if it applies the organizational design of ExOs. On the other hand, if Ismail had only promised short-term, exponential growth for software companies based in Silicon Valley, his research could have potential for producing valuable insights.

The big promise of *Exponential Organizations* has tempted and will continue to tempt business executives, entrepreneurs and visionaries to believe in Ismail. However, the assessment of Ismail's revolutionary promise of exponential growth for companies of any size and in any industry in this thesis has presented the reader with contradictory research based on the collective knowledge of my community. Ismail was largely subject to confirmation bias when researching his vision of ExOs, and therefore reached a false conclusion according to the knowledge possessed by my community.

## What can be gained from reading Exponential Organizations?

It was concluded on page 52 that a company cannot achieve and maintain exponential growth by applying Ismail's proposed organizational design. So is the concept of ExOs

useless? It is my reflection that it is not. Rather, it is not about exponential growth, but about how to organize in order to harness benefits from knowledge sharing. If we forget about the great promise of exponential growth, the organizational techniques presented in Exponential Organizations can produce insights about intra- and inter-firm knowledge sharing. To develop this argument further, knowledge needs to be specified more clearly.

Let us turn to a view of the firm that is similar to RBV, but differs in terms of the importance of knowledge. The knowledge-based view (KBV) of the firm focuses on knowledge as the most strategically important resource of firms (Grant, 1996). KBV is based on the assumption that "/…/ the critical input in production and primary source of value is knowledge." (Grant, 1996, p. 112). The primary role "/…/ of firms is in the application of existing knowledge to the production of goods and services." (Grant, 1996, p. 112), of which production requires the input of a wide variety of specialized knowledge possessed by numerous individuals. (Grant, 1996) Let us assume that knowledge is the most critical input in production, and let us assume that companies have the ability to implement the internal mechanisms and leverage some of the externalities presented on page 26-35, although not necessarily simultaneously. Thereafter, let us examine what insights can be gained from implementing some of these attributes from a knowledge-based perspective of companies.

As mentioned in the previous paragraph, the KBV assumes that the critical input in production resides within individuals, whom have been employed by the firm to apply their knowledge in production of goods and services. A company leveraging externalities, such as on-demand staff as well as community and crowd, have access to a larger pool of knowledge, which can be applied in the production of its goods and services. However, the coordination of such large numbers of individuals applying their knowledge in the company's production can become problematic.

The use of information technologies can assist in overcoming the issue of coordination. Alavi and Leidner acknowledged the important role of information technology in improving a firm's ability to effectively apply existing knowledge to create new knowledge and to take action (2001). The authors argued that advanced information technology "/…/

can be used to systemize, enhance, and expedite large-scale intra- and inter-firm knowledge management." (Alavi & Leidner, 2001). Hence, a company can implement interfaces and leverage algorithms to systemize, enhance, and expedite large-scale inter-firm knowledge management. Knowledge possessed by on-demand contractors as well as community and crowd can thus be coordinated using interfaces. Furthermore, a company can utilize social technologies to systemize, enhance, and expedite large-scale intra-firm knowledge management. Let us examine further benefits of implementing some of the internal mechanisms of ExOs.

Grant called for "/…/ the renovation of traditional organizational structures through delayering and empowerment and the development of new organizational forms including horizontal and team-based structures and interfirm alliances." (Grant, 1996, p. 120). The author based his assertion on the specific characteristics of knowledge. Knowing about facts is explicit knowledge and can easily be communicated and thus transferred within the organization (Grant, 1996). Hence, a company can implement social technologies to reinforce the transfer of explicit knowledge. Implementing social technologies, such as file sharing and telepresence, entails further benefits. Alavi and Leidner found that information technology allowed organizational knowledge to be applied across time and space through increasing internal social networks and the amount of organizational memory available (2001). Sharing information by using e.g. Dropbox or interact on a global scale through videoconferencing allow the company to apply organizational knowledge across time and space.

However, knowing how, or tacit knowledge, is acquired through practice and is therefore difficult to transfer within the organization (Grant, 1996). Coordination by hierarchy is inefficient due to tacit knowledge being difficult to transfer upwards, and managers only knowing fractions of what subordinates know. Team-based organizations recognizes barriers of transferring tacit knowledge while simultaneously accessing and integrating tacit knowledge of organizational members. (Grant, 1996) Therefore, team-based organizations are seen as superior to hierarchical organizations in KBV. Hence, a company can

implement autonomy, or self-organizing, multi-disciplinary teams, in order to access and integrate tacit knowledge of the company's employees.

Furthermore, KBV entails a co-location of decision-making and knowledge, since it is difficult to transfer tacit knowledge to management. Therefore, decisions based on tacit knowledge ought to be decentralized, while decisions requiring explicit knowledge ought to be centralized. (Grant, 1996) Hence, a company can implement autonomy through self-organizing, multi-disciplinary teams operating with decentralized authority to co-locate decision-making and knowledge within the company and thus make well-informed decisions. In addition, a company can implement experimentation to improve decision-making. Davenport and Prusak found that organizational members in organizations that punish mistakes can access and assimilate knowledge, but do not apply it due to risk aversion (1998). Hence, implementing experimentation and thus allowing organizational members to fail fast and fail often, while eliminating waste, reinforce knowledge application in the production of goods and services.

To conclude, it is my reflection that the concept of ExOs is not useless. However, the disconnect is that while the parts of the organizational design is beneficial for intra- and inter-firm knowledge sharing and application, it does not guarantee exponential growth in any sense.

## Conclusion

Based on the assumption that performance is key in business, and growth is decisive for performance, Salim Ismail stated in his book *Exponential Organizations* that the incremental, linear way of which traditional companies get bigger can be disrupted by a fundamental change of the nature of the organization. By applying the right organizational design, Ismail claimed that companies are able to grow in a radical, exponential way and therefore outperform companies that are growing linearly. The purpose of this thesis has therefore been to answer the research question of whether a company can achieve and maintain exponential growth by applying the organizational design proposed by Ismail. A

deductive reasoning approach based on the collective knowledge of my community lead to the conclusion that a company cannot achieve nor maintain exponential growth by applying the organizational design proposed by Ismail.

The objective of the first section of the analysis was to enlighten the discussion of exponential growth and what it entails. Exponential growth causes a snowball effect in consumption of resources that cannot be sustained in a finite system such as planet Earth. It was shown that external limitations such as resources, production capacity, and demand will constitute absolute limits to growth. Exponential growth of any kind can therefore not be maintained for an indefinite period, and is therefore a short-term transient phenomenon. It was thereby concluded that it is not possible to maintain exponential growth, thus questioning Ismail's conclusion prior to the analysis of his premises.

In the second part of the analysis, evidence showed that capital constraints will put an end to the effects of Moore's Law within a decade. Thus, information-enabled technologies will not continue to become cheaper nor less costly to put to use, resulting in the following implications. If it is so that information-enabled technologies are a prerequisite for ExOs to leverage outsourcing, and these technologies will not continue to be democratized, the act of outsourcing during growth will entail the same costs and issues for ExOs as for traditional organizations. Moreover, if it is so that information-enabled technologies are a prerequisite for ExOs to achieve and maintain exponential output by only maintaining a small core of employees, and these technologies will not become cheaper nor less costly, the organization of ExOs must grow in order to maintain exponential growth. Therefore, internal limitations to growth cannot be overcome by applying the organizational design proposed by Ismail. Hence, the first premise being false had implications for the second as well as the third premise, and questioned the validity of Ismail's conclusion.

In the third part of the analysis, it was found that the variable costs associated with outsourcing, transaction costs and hidden costs, were higher for ExOs relative to traditional organizations. Furthermore, it was shown that these costs will increase exponentially as ExOs grow. Thus, it was concluded that outsourcing will not result in minimized costs for ExOs, but rather increased variable costs and hence reduced flexibility. Moreover, it was

shown that outsourcing results in knowledge losses for ExOs, since even mission critical business functions and assets as well as the majority of staff is outsourced. Thus, suppliers will gain greater bargaining power and start controlling the outsourcing relationship, resulting in decreased flexibility for ExOs. In order to prevent decreased flexibility and knowledge loss, ExOs must allow the organization to grow along with the growth of the business. Therefore, internal limitations to growth cannot be overcome by applying the organizational design proposed by Ismail. Thereby the second premise being false had implications for the third premise, adding on to the implications from the first premise, and questioned the validity of Ismail's conclusion.

In the third part of the analysis, it was concluded that information-based technologies and external resources can be accessible to ExOs, but employees and management personnel will be limiting the rate of growth. Based on the conclusion from previous sections that ExOs must allow their organizations to grow along with the exponential growth of business, it was concluded that is difficult to increase the number of managers needed to manage the company efficiently while growing exponentially. After all, human beings do not function in an exponential manner. It was therefore argued that human beings are what will be decisive for the performance of companies, not technology or organizational techniques such as outsourcing. Thus, the internal limitations to growth will limit the rate of growth of ExOs, making it impossible to achieve and maintain exponential growth.

The analysis hence showed that using organizational techniques that enable companies to leverage technologies and outsourcing do not overcome internal and external limitations to growth. Due to the internal limitations to exponential growth and the external limitations to exponential growth, it was concluded that it is impossible to achieve and maintain exponential growth for companies. Thus, a company cannot achieve and maintain exponential growth by applying Ismail's organizational design.

The big promise of *Exponential Organizations* has tempted and will continue to tempt business executives, entrepreneurs and visionaries to believe in Ismail. However, the assessment of Ismail's revolutionary promise of exponential growth for companies of any size and in any industry in this thesis has presented contradictory research based on the

collective knowledge of my community. Ismail was largely subject to confirmation bias when researching his vision of ExOs, and therefore reached a false conclusion according to the knowledge possessed by my community.

However, *Exponential Organizations* can produce valuable insights to the possibility to achieve steep growth for software companies based in environments similar to Silicon Valley, U.S. Nevertheless, more research is required in order to understand what organizational techniques, internal mechanisms, tools etc. must be in place for companies in any industry to achieve steep growth.

So is the concept of ExOs useless? It is my reflection that it is not. Rather, it is not about exponential growth, but about how to organize in order to harness benefits from knowledge sharing. Dismissing the great promise of exponential growth, the organizational techniques presented in *Exponential Organizations* produced insights about intra- and inter-firm knowledge sharing. However, the disconnect lies in the fact that while parts of the organizational design proposed by Ismail are beneficial for intra- and inter-firm knowledge sharing and application, it does not guarantee exponential growth in any sense.

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