Capabilities Monitoring Model: Meeting the Challenges of Disruptive Innovation?

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Declaration:

Herewith I declare that this thesis is the result of my independent work. All sources and auxiliary materials used by me in this thesis are cited completely.

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Contents
1. Introduction..................................................................................................................4
  1.1. Motivation..................................................................................................................5
  1.2. Thesis Statement.......................................................................................................6
  1.3. Thesis Approach.......................................................................................................7
2. Disruptive Innovation....................................................................................................9
  2.1. History/Terminology/Background .............................................................................9
  2.2. The Disruptive Innovation Theory..........................................................................11
  2.3. Theory’s Latest Developments..............................................................................15
  2.4. The Innovator’s Dilemma: Conclusions and Approaches .......................................16
  2.5. Other Existing Approaches ....................................................................................23
  2.6. Criticism..................................................................................................................27
3. Meeting the challenges of disruptive innovation .......................................................30
  3.1. Capabilities, Organizational Capabilities, Dynamic Capabilities .........................32
  3.2. Capabilities Monitoring Model: A Dual Process Model of Capability
       Dynamization................................................................................................................33
  3.3. Background and Design.........................................................................................33
  3.4. Implementation Strategy..........................................................................................37
  3.5. Conclusions and Limitations..................................................................................39
4. IBM Case Study ............................................................................................................41
  4.1. Methodology.............................................................................................................41
  4.2. Case Study Report....................................................................................................43
  4.3. Case Study Limitations............................................................................................48
5. Wrap-up ..........................................................................................................................49
  5.1. Conclusions..............................................................................................................49
  5.2. Potential Impact and Forecast................................................................................50
6. Bibliography ..................................................................................................................51
7. Appendixes....................................................................................................................55
1. Introduction

“As companies tend to innovate faster than their customers’ needs evolve, most organizations eventually end up producing products or services that are actually too sophisticated, too expensive, and too complicated for many customers in their market.” (Clayton Christensen, 2014)

Most theories and studies about new challenges analysis, improving of management strategies, innovation issues, flexible business models have something in common: helping firms in finding the best way to reach high profits and gaining (sustainable) competitive advantage, to get or keep them on top and secure from threats, in a more and more dynamic environment and thus when dealing with change.

*The only thing that is constant is change.* 2,500 years later, Heracles perception still stands. Markets change, expectations change, management competencies and capabilities had to change. Globalization processes force companies to become more flexible, faster in adapting their strategies and structures, thriving in not only being able to respond to change but influence and control it. In other words, change cannot be avoided ergo it has to be dealt with.

History has taught us to expect technological change. A century ago industrialized countries relied on coal-fueled steam engines while airplanes or instantaneous global electronic communication were a fantasy. Some of these technological changes are nowadays exemplified under the term of *disruptive innovations*.

However, success must not mean pursuing or reevaluating strategies which have historically helped succeed. As Clayton M. Christensen states in his book “*The Innovator’s Dilemma*”, by charging higher prices for innovation to the most demanding and sophisticated clients – an often met strategy – successful companies will indeed achieve great profits, but also endanger the sustainability of their strategy, for companies at the bottom of the market will develop simpler solutions, making products and/or services available also for consumers who don’t have a lot of money or a lot of skill, thus taking over market segments or emerging
new ones (cf. Christensen, 2014). Also, the tendency companies have of improving
good old problem solving models may prevent the genesis of new, innovative
capabilities (cf. Eberl, 2009 p. 22).

The theories around the concept of disruptive innovation started with the question: why brilliant and reasonable decisions of competent and highly trained managers still cannot exclude the possibility of businesses to fail? (cf. Christensen et al., 2011 p.5) Christensen gives a lot of examples of such companies, some of which will also be mentioned during the present thesis. However, the main focus will be to explore the disruptive innovation theory and its challenges and test the capabilities monitoring model (cf. Eberl, 2009), as a possible, complementary way of meeting the challenges of disruptive innovation.

But before going into the details, the key concepts will be defined and the bridge between these concepts will be built. Each chapter will therefore offer the reader the appropriate background information, theories and examples, thus making it possible to follow the outline of the present thesis effortlessly.

Also, expert interviews with top managers from IBM will offer practical insights about how the company got to be affected by disruptive innovation and how the ‘damage’ is being dealt with.

This research will in the end have answered the following questions: Why should companies be more aware of the challenges of disruptive innovation? Could the capabilities monitoring model help managers improve decision making amidst the uncertainty surrounding the challenges of disruptive innovation?

1.1. Motivation

The introduction must already have given a preview about the motivation behind the title of the thesis. However, the questions and research on this topic started with the personal observation in the last couple of years, on how due to globalization processes, companies and markets were more or less forced to deal with new economic, political and cultural boundaries, new competition, new clients and a faster development rhythm as before. Innovation and the sustainability of
competitive advantages started gaining importance, business strategies had to be adjusted and it became clear that change should be considered as a constant companion. Also, during an internship at IBM Deutschland GmbH, a company over 100 years old, the question arose: how does an established company deal with changes and furthermore how and why could the challenges brought by the changes affect the company?

Looking for the first answers in “The Innovators Dilemma”, the research got focused on innovation and specifically on disruptive innovation. Consequently, the idea of writing the Bachelor Thesis about the topic came into consideration. However, during the research phase, more and more theories and authors, preoccupied with the same questions, came to light.

In addition, one more reason for deciding to further explore this matter was the fact that seventeen years after “The Innovator’s Dilemma” was published, the book is still being called Silicon Valley’s Bible or the 21st century’s management mantra (cf. Manager Magazine Online, 2014).

1.2. Thesis Statement

“The Innovators Dilemma” explains how successful companies like for example IBM, despite good management and lots of resources, still managed to miss opportunities or be thrown out of concurred market segments by smaller companies with less resources or economic power (cf. Christensen et al., 2011 pp. 136-138). As the author puts it, it sometimes is exactly that good management that may lead to a company’s failure or to its blindness for the challenges or opportunities disruptive innovation can bring (cf. Anthony et al., 2008 p. vii).

Before and since 1999, the year “The Innovators Dilemma” became a bestseller, several other authors, researchers and entrepreneurs also worked on finding new approaches and models, which would help companies like IBM, to master these challenges. Forums where created, conferences were held, more books and articles were written, all having the purpose of helping organizations in understanding and dealing with challenges of disruptive change or inspiring in how
to develop new growth strategies, build innovation capabilities and create disruptive new products and/or services that can improve people’s lives.

The thesis will consider innovation as the capability of companies to comprise complex interrelationships between the human, organizational and technological requirements to continuously create innovations (cf. Jeschke et al., 2011 p.3). However, in the case of disruptive innovation, capabilities disrupters possess and disruptees seem to lack, may mean the difference between failure and success.

The main focus of the thesis will therefore be to identify the challenged capabilities around disruptive innovation, describe its characteristics, establish the connection between the disruptive innovation theory and the capabilities monitoring model and determine whether, why and how the capabilities monitoring model could meet these challenges and be a complementary tool to the already developed theories.

1.3. Thesis Approach

While the first part of the thesis, chapters one and two, focus mainly on the theoretical explanation of the “problem” (disruptive innovation theory), the second part, starting chapter three, will begin to pin down the existing solution possibilities and explore the potential of a complementary helping tool by introducing the capabilities monitoring model.

The first chapter provided an overview on the main theories, background and statements the thesis will be concerned with. Chapter two will start by clarifying the birth and development of the theories around the key concept of disruptive innovation, offer current definitions and examples and cover existing criticism. The purpose of this chapter will be to underline the importance of being aware about what disruptive innovation is and how it can affect a business and also point out the capabilities needed in the disruption context.

Chapter three will give an overview on the existing solutions professionals developed to help companies deal with challenges of disruptive innovation so far and also create the link to the capabilities monitoring model – a possible solution the current thesis will test out. This will consist in a short introduction in the
ideology of the capabilities monitoring model and in explaining the design and the implementation strategy. The reason why the model was thought to be a possible solution for companies trying to deal with disruption will be made clear.

After analyzing the disruptive innovation theory as the “problem” and the capabilities monitoring model as a possible complementary “solution” on a theoretical level, chapter four will consist of a practical case study. The expert interviews, conducted with IBM top managers, will question the awareness of the problem from the company’s perspective, the adopted strategies with respect to the problem and the perceived importance of capabilities monitoring as a solution.

The last chapter of the thesis will offer a summary on all of the above, debate on the potential impact of the results and will also formulate a forecast based on the obtained perspective.
2. Disruptive Innovation

Beyond the ideas and research behind the concept of disruptive innovation, which will be described in detail during this chapter, another fascinating fact about this theory is its development process. The term was first introduced in 1995 and it is still an often used source of inspiration, frequent topic of debate and strict guideline for managers, authors and researchers around the world today. Nevertheless, during the development of the theory, the author makes reference to research published in the late ‘40s like for example Schumpeter’s *Creative Destruction* theory.

2.1. History/Terminology/Background

“It only seems appropriate that, in times of economic challenge, global competition, and an overabundance of similar products and services, leaders would turn to innovation as the new corporate mantra. Unfortunately, the concept of innovation has been so widely used and misused that many people are now confused as to what it really is.” (Dundon, 2002, p.5)

Having acknowledged the above statement, the present thesis will consider innovation as the capability to comprise complex interactions between human, organizational and technological resources in order to continuously produce new ideas that contribute to sustainable changes (cf. Jeschke et al., 2011 p. 5). Furthermore, every product can be the subject of evolutionary or sustaining innovation and/or of disruptive innovation (cf. Jeschke et al., 2011 p. 358; Christensen et al., 2011 p. 6).

“Disruption (noun): Disturbance or problems which interrupt an event, activity, or process; disruptive (adjective): causing or tending to cause disruption” (Oxford Dictionaries Language Matters, 2014)

While sustaining developments (innovations) target the improvement of products and/or services, disruptive ones are considered leaps in innovation in terms of
products and/or services replacing established ones (cf. Christensen / Raynor, 2003 p. 32).

1995 the term disruptive technology was coined by Clayton M. Christensen, Professor of Business Administration at the Harvard Business School and first introduced in the same year in his article “Disruptive Technologies: Catching the Wave” for the Harvard Business Review, together with co-author Joseph Bower. The observation which brought the authors back then to concern themselves with the topic, was the consistent pattern of leading companies failing to stay at the top of their industries when technologies or markets change (cf. Bower/Christensen, 1995 p. 43).

The subject providing the input for the research in the process of developing the theory of disruptive innovation was the hard disk industry and companies like IBM and Apple. The author argues that for a better understanding of economic contexts, one would best choose an industry where change happens fast and often, so therefore the consequences these changes bring with them could be analyzed quickly and future strategies better planed. Producers of hard disks offer this possibility as there is no other industry with quicker changes in technology, market structures, globalization aspects and vertical integration. (cf. Christensen et al., 2011 p.4)

In The Innovator’s Dilemma, the author would further shape the grounds of the theory of disruptive innovation, though it would only be in the sequel, “The Innovator’s Solution” in 2003, when the term disruptive technology would be replaced with disruptive innovation. The change is due to the author recognizing that it is rather the business model that the technology enables that creates the disruptive impact and not the technology itself. (cf. Christensen / Raynor, 2003 p.32)

Continuing the research on disruptive innovation and also wanting to help firms understand the concept, Christensen also decides to found a management consulting firm. Thus, in 2000 the management consulting firm Innosight was
founded, with the purpose of advising enterprises on business strategies, using methods based on the concept of disruptive innovation.

“Innosight is a global strategy and innovation consulting firm. We are the leading authority on disruptive innovation. We collaborate with companies to devise growth strategies, build innovation capabilities, and create products and services that improve people’s lives.” (Innosight, 2014)

Seven years and several published books later, the Clayton Christensen Institute for Disruptive Innovation would be founded, a nonprofit, nonpartisan think tank, at first known under the name of Innosight Institute. The institute’s focus and that of its founders is “(…) on education and health care, (…) redefining the way policymakers, community leaders, and innovators address the problems of our day by distilling and promoting the transformational power of disruptive innovation.” (Clayton Christensen Institute for Disruptive Innovation, 2012)

Till the present day, Christensen wrote and/co-authored eight books and over 50 journal articles, further developing the disruptive innovation theory and advising readers all over the world how to best formulate their strategies involving the concept.

2.2. The Disruptive Innovation Theory

Finally we come to the theory itself:

“Disruptive innovation, a term of art coined by Clayton Christensen, describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors.” (Christensen, 2014)
The research behind the theory starts with the question: “How can great firms fail?”
(cf. Christensen, 1997 p.3) The question may be considered as reasonable curiosity when considering failures of top companies with great history of success.

In “The Innovator’s Dilemma”, the author describes three research outcomes as logic grounds for the failure context: the first is the differentiation between sustaining- and disruptive technologies, the second considers the technological development and the fact that technologies evolve quicker than market demand and third, the client structure and management tools with a high power over the company’s investment decisions (cf. Christensen et al., 2011 p. 6).

- Sustaining- versus Disruptive Technologies

By analyzing the performance trajectories of companies’ products, the difference is made between sustaining- and disruptive technologies: while sustaining technologies maintain a certain rate of product improvement, the disruptive technologies introduce products with different attributes, very different of the ones mainstream customers would need or value (cf. Bower / Christensen, 1995, p. 43).

In other words, sustaining innovations are improving the performance of existing products in order to meet client’s expectations on established markets. These type of innovation will hardly ever lead to a company’s failure as they are attending to customer’s needs and fulfilling their expectations in respect to top performance of products. Knowing this, almost any product can offer an example: a microprocessor that enables personal computers to operate faster, a battery that lets laptop computers operate longer, cameras which produce more pixels etc.

Disruptive innovations however, first address a considerably smaller market by offering technologically inferior products but paradoxically still often managing to bring established firms to fail by eventually replacing their products (cf. Christensen et al., 2011 p.6). These innovations would not be considered by established companies for they do not interest their targeted clients in terms of meeting performance needs. On the other hand, disruptive innovations will attract less demanding clients with attributes like price accessibility, simpler designs and/or
ease of use. The disruption occurs when this type of innovations gradually improve over time, becoming functionally equivalent to the incumbent technology, at which point they seize the market and throw out the once leading occupant. (cf. Christensen / Raynor, 2003 p.32)

To better understand the phenomena of disruption, here are some examples:

<table>
<thead>
<tr>
<th>Disruptor</th>
<th>Disrupee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Computers</td>
<td>Mainframe and mini computers</td>
</tr>
<tr>
<td>Mini mills</td>
<td>Integrated steel mills</td>
</tr>
<tr>
<td>Cellular phones</td>
<td>Fixed line telephony</td>
</tr>
<tr>
<td>Digital Camera</td>
<td>Film Camera</td>
</tr>
<tr>
<td>MP3</td>
<td>CDs</td>
</tr>
</tbody>
</table>

Examples of disruptive innovation (own representation based on Christensen et al., 2011 p. 18)

- Technology Development versus Market Demand

The second observation regarding the failure framework is that technologies are progressing faster than market demand, meaning that when trying to be better and faster than the competition, companies often exceed their customer’s expectations and/or needs (cf. Christensen et al., 2011 p.7). By doing so, these companies will become vulnerable in the context where disruptive innovations, having reached the equivalent performance level, will take over the market using the initial attributes like lower prices and/or ease of use. The following chart will offer a clear view of the product’s performance development impact:
Rational Investment Decisions versus Disruptive Innovation

With the third and last factor of the failure framework, Christensen explains the thinking steps of managers behind the decision of not investing in disruptive innovations. First of all, the fact that disruptive products are cheaper and simpler, can’t promise high margins or great profits. Second of all, the markets disruptive innovations target are emerging or insignificant ones and therefore unimportant for established companies. Last but not least, leading companies will always listen to their most profitable customers, who at first would not be interested in disruptive products as these could not deliver the needed and expected performance. (cf. Christensen et al., 2011 p. 8)

“Managers must beware of ignoring new technologies that don’t initially meet the needs of their mainstream customers.” (Bower/Christensen, 1995). The authors were hereby suggesting that decision makers would be too focused on satisfying main customers’ needs and expectations and by doing so failing to acknowledge the importance and/or threats of new emerging technologies.
2.3. Theory’s Latest Developments

After developing the theory of disruptive innovation and describing its roots in “The Innovators Dilemma”, the concept was further developed in “The Innovators Solution” by the differentiation between two types of disruption: the new-market-disruption and the low-end-disruption (cf. Christensen / Raynor, 2003 p.45).

For a better understanding the third dimension was added to the disruption diagram:

Figure 2: The third Dimension of the Disruptive Innovation Model (Christensen / Raynor, 2003 p.44)

- Low-end Disruption

The former disruptive innovation concept is here illustrated under the new term of low-end disruption, showing how technologies tend to progress faster than market demand. As we already learned, this happens when incumbent firms, often in an effort to provide better products than their competitors and increase their margins, exceed their market. By adding new attributes to their existing product and charging more for it, while at the same time investing less money in R&D, they end up giving customers more than they expect and will be in the end willing to pay for.
A disruptive product will target the customers with less performance expectations, by offering a new, simpler and more affordable way to accomplish only the tasks they consider important. These disruptive technologies won’t be performance competitive in the same market at first. However, once a disruptive product gains a foothold in new low-end markets, the improvement cycle begins. Giving the fact that the pace of technology is faster than the customer’s ability to absorb it, a previously inferior product will improve enough to compete in the market, this revealing a performance gap between sustaining products and disruptive products. (cf. Christensen / Raynor, 2003 p.46)

- New-Market Disruption

The new-market disruption portion of the graph involves new contexts of consumption and competition. These include new customers who previously lacked the money or skills required to buy and use the product offered by established firms. Although new-market disruptions initially face non-consumption, as their performance improves, they eventually become good enough to attract the type of customers mentioned above (cf. Christensen / Raynor, 2003 pp. 45-46).

A classic example of new-market disruption would be the Personal Computer (cf. Christensen / Raynor, 2003 p. 45): Mainframe Computers were too expensive and only performing specific operations, thus not being an option for private households. The Personal Computer was introduced as a cheaper and user friendly solution, attracting consumers who were non-users until that point.

The differentiation between these two types of disruption also underlines the previous observation that established companies focus too much on main customer’s needs and are thus blind to acknowledging potentials and threats of markets left unsatisfied.

2.4. The Innovator’s Dilemma: Conclusions and Approaches

After analyzing and describing the factors behind disruption, this chapter moves on to stating the conclusions as to which the phenomenon of disruptive innovation brought highly established and very resourceful companies to miss opportunities
and allow less resourceful companies to take over their markets. Thus, the author formulates the five principles of disruptive innovation in “The Innovator’s Dilemma”, which in the author’s opinion should be considered by managers:

1. **Customers and investors influence a company’s resource allocation.** The resource allocation will not be decided by managers but actually by main customers and investors, in other words by external stakeholders. If a company won’t direct its resources according to customer’s and investor’s interests, it won’t survive for long. Therefore it is important and even advisable to manage the allocation of resources targeting the best interest of the external stakeholders. (cf. Christensen et al., 2011 p. 13) This so called resource based perspective was developed by Jeffrey Pfeffer, Professor at the Stanford Graduate School of Business and it states the following:

   “Organizations are not self-directed and autonomous. They need resources, including money, materials, personnel and information; to get these they must interact with others who control such resources. This involves them in a constant struggle for autonomy as they confront external constraints.” (Pugh / Hickson, 2007 p.127) One can see though how this controversial theory can strongly influence decisions around disruptive innovation projects.

2. **Small markets don’t satisfy growth expectations of large companies.** Both internal and external stakeholders expect successful companies to grow. It is difficult for a company with a sales volume of four billion to obtain a ten percent growth in a new developing market (cf. Christensen et al., 2011 p.14). The result will in this case be that companies will wait for the market to grow and later join as competitors. However, this scenario will also cause some trouble as companies will try to outperform their competitors and grab a greater share of the existing demand. The market space might get crowded and prospects for profits will be reduced – a consequence described in “The Blue Ocean Strategy”, finally stating that
“(...) products will then become commodities, and cutthroat competition will turn the red ocean bloody.” (Kim / Mauborgne, 2005 p.3)

3. **Markets which don’t exist can’t be analyzed.** Companies whose investment processes need data about the market size and its financial returns before they can make a decision and enter a market get paralyzed when faced with disruptive technologies because they require data on markets that don’t yet exist.

4. **Organizations have their own capabilities, separate of those of their managers.** Organizational competencies lie within processes and values, these building the barriers around disruptive innovation.

5. **Technology supply mustn’t necessarily equal market demand.** Performance criteria which make disruptive innovations unattractive for existing markets, are often exactly the ones creating important value on emerging markets.

Building on these principles and on a number of further historical cases, Christensen and Raynor concluded in “The Innovator’s Solution”, there are three options to beat competitors by creating new growth businesses (cf. Christensen / Raynor, 2003 p. 51):

- Sustaining innovation: bring a better product into an established market;
- Low-end disruption: offer underserved customers a lower-cost business model;
- New-market disruption: compete against nonconsumption.

The same year “The Innovator’s Solution” was offering the above advice, Christensen together with co-author Raynor and Anthony, published an article titled “Six Keys to Building New Markets by Unleashing Disruptive Innovation” in the Harvard Management Update Newsletter. Building on all the available research until that point, the authors describe six steps to be considered by managers of both established companies and start-ups (Harvard Business School, 2003):

1. **Disruptive innovations spur growth:** As established through Christensen’s input so far, companies have two basic options when they seek to build
new-growth businesses: either through sustaining innovations, or through disruptive innovations (low-end or new market disruptive innovation). However, the authors suggest the disruptive approach would be the better choice as the sustaining one may at some point stop satisfying customers – as already explained. Nevertheless, as disruptive innovation may be the better suggestion for established incumbents, sustaining innovations could help start-ups to stay competitive on the short term.

The authors refer here to examples like the small off-road motorcycles introduced by Honda in the 1960s, Apple's first personal computer, and Intuit's QuickBooks accounting software. All these innovations brought a different value proposition to a new market context and created substantial growth.

“Incumbents almost always win battles of sustaining innovations. Their superior resources and well-honed processes are almost insurmountable strengths. Incumbents, however, almost always lose battles where the attacker has a legitimate disruptive innovation. To create a new-growth business, companies—established incumbents and start-ups alike—must be on the right side of the disruptive process by launching their own disruptive attacks.”(Harvard Business School, 2003)

2. Disruptive businesses either create new markets or take the low end of an established market: Here the authors describe the two possible types of disruptive innovation, which, as already learned, are the new market- and low-end disruption. For the new market disruption the authors give as example the pocket radio Sony introduced in 1995:

“Transistors were a disruptive innovation. Mainstream suppliers of tabletop radios, which were made with vacuum tubes, couldn’t figure out how to use transistors because they couldn’t initially handle the power requirements of these components. Then in 1955, Sony introduced the pocket radio. It was a static-laced product with horrible fidelity. But it enabled teenagers to do something that they couldn’t before—listen to rock’n’roll out of their parents' earshot. Had Sony targeted consumers in
established markets, the pocket radio would have bombed. But for teenagers, the alternative to a Sony pocket radio was no radio at all. By competing against nonconsumption, Sony set a very low technical hurdle for itself: The product just had to be better than nothing in order to find delighted consumers.” (Harvard Business School 2003)

For the low-end disruption the authors used the steel industry and “the disruption of integrated steel mills by steel minimills (…)” as example (cf. Harvard Business School, 2003).

3. Disruptive opportunities require a separate business-planning process

“Companies frustrated by an inability to create new growth shouldn't conclude that they aren't generating enough good ideas. The problem doesn't lie in their creativity; it lies in their processes. Only by creating a parallel process for developing and shaping disruptive ideas—one that acknowledges their distinctive features—can companies successfully launch disruption after disruption.” (Harvard Business School, 2003)

Thus the authors are suggesting that a company's process when developing sustaining innovations shouldn't be the same when trying to develop disruptive innovations and advise to rather adopt intuitive processes like pattern recognition, using tools like discovery driven planning, aggregate project planning and the schools of experience theory.

The concept of discovery driven planning, first introduced in a Harvard Business Review article by Rita Gunther McGrath and Ian C. MacMillan in 1995 (McGrath / MacMillan, 1995), is based on the idea that when one has to deal with markets which cannot be entirely analyzed due to uncertainty, a different approach than is normally used in conventional planning should be applied. Here the authors argue that, in contrast to conventional planning, where the accuracy of a plan is generally judged by how close outcomes come to projections, discovery-driven planning, assumes that parameters may change as new information is discovered.
Also, conventional planning considers appropriate to fund a project when a positive outcome is to be expected while in discovery driven planning, funds will be released based on the accomplishment of key milestones.

Aggregate project planning, a concept often met in new product management and business development books, helps when it comes to resource allocation by ensuring that “(...) collectively, individual and group project assignments make sense over time, enhancing and expanding the organization’s critical capabilities.” (Wheelwright, 1992 p.87)

Last but not least, the school of experience theory is an assessment instrument which helps “(...) inform internal staffing decisions”. (Anthony et al., 2013 p.187)

In “The Innovator’s Solution”, the authors argue that many innovations fail because of “managers or organizations whose capabilities aren’t up to the task.” (Christensen / Raynor, 2003 p.177) In wanting to offer executives advice on how to best choose the management team and build an organizational structure for successfully building new-growth businesses, the authors dedicated an entire chapter on the concept of capabilities. Regarding an organization’s capabilities, they divided the concept into three classes, which would define what an organization would be capable or incapable of. These classes are the resources, the processes and the values of organizations and together they form what the authors call the RPV framework (Christensen / Raynor, 2003 p.178). Each of the terms would be separately defined and analyzed by the authors with the purpose of in the end being able to provide powerful input on how to make disruptive innovation more possible to succeed. However, the way the authors approach this issue is more a question of how to best allocate and/or make-or-buy capabilities in terms of resources, processes and values.
4. *Don't try to change your customers—help them.*

Here the authors suggest that rather than enforcing products on customers, one should let the customer inform about desired and needed designs.

5. *Integrate across whatever is not good enough.*

When creating an innovation-driven growth business it is very important to consider which activities can and need to be managed internally and which can be outsourced.

“The critical question is: What are the circumstances in which my firm should be integrated and what are the circumstances in which my firm can be a specialist? Integration provides advantages whenever a product is not good enough to meet customer needs. Proprietary, interdependent architectures allow companies to run multiple experiments, pushing the frontier of what is possible. Engineers can reconfigure their systems to wring the best performance possible out of the available technology.” (Harvard Business School 2003)

In other words, companies should integrate across whatever interface pushes their performance along dimensions that their customers value. Thus, in an industry's early days, this could be possible through interfaces that drive raw performance, like design and assembly. Once a product's basic performance is better than expected by customers, competition forces firms to compete on specific attributes like convenience or customization. In these situations, expert companies emerge “*and the necessary locus of integration typically shifts to the interface with the customer*” (Harvard Business School 2003).

6. *Be patient for growth but impatient for profitability.*

The advice the authors give here is for companies not to disconsider an opportunity just because it would take longer to bring high profits.
“Managers inside new-growth businesses often feel tremendous pressure to quickly ramp up sales volume. But disruptive businesses can’t get big very fast.” (Harvard Business School 2003).

However, once a company’s core business has matured, pursuing new platforms for growth means taking risks (cf. Christensen / Raynor, 2003 p. 1).

2.5. Other Existing Approaches

The research for the present thesis started with Christensen’s theory of disruptive technology, later becoming the theory of disruptive innovation. However, the more in-depth the research got, the fact that Christensen was just one of many to ask these questions or analyze innovation from a defense perspective became clear.

As stated at the beginning of the thesis, technological change has been happening for some time now and the author himself gives examples of disruptive innovation from decades ago, like the personal computer replacing the mainframe computer.

In 1942, Joseph Schumpeter coined the paradoxical term creative destruction and generations of economists have adopted it as a shorthand description of the free market’s messy way of delivering progress:

“The opening up of new markets, foreign or domestic, and the organizational development from the craft shop to such concerns as U.S. Steel illustrate the same process of industrial mutation—if I may use that biological term—that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.” (Schumpeter, 1942 p.83)

Although Schumpeter only devoted a chapter of six-pages to The Process of Creative Destruction, in which he described capitalism as “the perennial gale of
creative destruction”, one may say it has become the foundation for modern thinking on how economies evolve.

Also, in 1967, the article “Strategies for a technology-based business”, started with: “Sophisticated technologies, the life blood of more and more companies” (Ansoff / Stewart 1967). The findings in this article were quoted in 1971 in “The process of technological innovation within the firm” (Utterback, 1971) in which the author started to develop his view on the process of technological innovation. One of the objectives of this article was to evaluate the efficiency of firms in originating, developing and implementing technical innovations. The results of the research were not positive for incumbents: “Firms apparently tend to innovate in areas where there is a fairly clear short-term potential for profit... most second-level innovations (those that represent a breakthrough or have the potential to change the character of a whole industry) tend to come from sources other than firms within that particular industry” (Utterback, 1971). The author was back then able to paint a good picture of the technological innovation, as he showed that product innovations thrive until a dominant design emerges, afterwards process innovations taking over because product innovations become irrelevant. He also showed that the number of competitors grows until the dominant design is fixed, this number decreasing afterwards.

A further important contribution was Richard Foster’s research as he showed that the relationship between the performance of a new technology and the research effort followed an S-curve shape:
Figure 3: *Research effort and technology performance* (Foster, 1985 p.132)

The author also shows that there is a discontinuity between the *old* and the *new* technology, a concept which is illustrated through two overlapping S-curves:
While most of Christensen’s input is based on the work of Utterback and Foster, he introduced the distinction between sustaining technologies (which he also referred to as positive discontinuities) and disrupting technologies (which he also referred to as negative discontinuities).

During the last decade, the innovation literature has embarked in a number of directions which are supposed to provide large and small companies with efficient ways to manage innovation:

- **Open Innovation** - allows companies to essentially source some of their innovation efforts to outside parties. Companies perform open innovation by essentially putting forth an innovation problem they are facing to the public and then inviting individuals to submit solutions to that problem (Chesbrough et al., 2006 p.13).

- **Blue Ocean Strategy** – a theory about how to make competition irrelevant by creating uncontested market space (Kim / Mauborgne, 2005 p.8).
Crowdsourcing – suggests that people can nowadays collaborate through the internet to imagine and produce the innovative services of the future (Howe, 2009 p.12).

These approaches provide interesting insight for executives. Nevertheless one can’t be sure about their real efficiency when it comes to helping an established company to preserve superior performance, especially in the face of disruptive innovation.

More recent empirical studies also support Christensen’s argument that incumbents can manage sustaining innovation successfully but stumble when dealing with disruptive innovation (Govindarajan et al., 2011).

2.6. Criticism

First of all, “The Innovator’s Dilemma” offers more input about how disruption happens and why it is harmful or at least a possible danger for incumbents, than how to act or react when dealing with disruptive innovation. As it is very important for managers to understand what causes what and why in order to make decisions concerning innovation issues, it is also very important to know which possibilities of concrete action are available and/or advisable in order to successfully meet the challenges of disruptive innovation and of course how to be able to cause it themselves. However, it will only be eight years later that Christensen, together with co-author Raynor, building on the input given in “The Innovator’s Dilemma”, would offer their advice on how to deal with disruption in “The Innovator’s Solution”.

“Managers in large companies who read The Innovator’s Dilemma may have finished the book thinking they’re destined to fail, no matter what they do. We hope to shift their sentiment from despair to hope. If managers understand the theories of innovation, they have the ability to create new-growth businesses again and again.” (Harvard Business School, 2003)
The Journal of Product Innovation Management published an article titled “Disruptive Innovation: In Need of Better Theory” by Constantinos Markides in 2006, in which the author argues that it was a mistake to apply the theory of disruptive innovation in explaining all occurrences of disruptive innovation. By distinguishing between two specific types of disruptive innovations, namely the business model innovation and the radical product innovation, Markides further argues that each type has a different effect brings different challenges to incumbents. Markides also refers to Danneels’s examination of the theory of disruptive innovation who wrote in 2004 that although the theory is widespread it is still unclear what disruptive innovation constitutes (Danneels, 2004). Markides agrees with Danneels. Christensen’s first focus concerning the concept of disruption was on technological innovation and specifically on how new technology influenced seemingly more superior technologies. However, Christensen later applied the theory not only on technologies but also on business models and products, which, from Markides’s perspective is wrong as these are completely different phenomena with different development paths, having different competitive effects, and therefore requiring different responses from incumbents.

“For example, Christensen and Raynor (2003) list as disruptive innovations such disparate things as discount department stores; lowprice, point-to-point airlines; cheap, mass-market products such as power tools, copiers, and motorcycles; and online businesses such as bookselling, education, brokerage, and travel agents. Although I agree that all of these innovations are disruptive to incumbents, treating them all as one and the same has actually confused matters considerably.” (Markides, 2006)

Surprisingly, the next piece of critical review on “The Innovator’s Dilemma” and Christensen’s theory about disruptive innovation only appeared earlier this year. On June 23rd The New Yorker was publishing an article with the title “The Disruption Machine; What the gospel of innovation gets wrong”. The Harvard
historian Jill Lepore argues in this article that Christensen’s historical cases which he had picked as proof to sustain his theory about disruptive innovation aren’t true. From a historian’s perspective, Lepore states that, as the disruptive innovation theory is meant to serve as an account of the past but also as a model for the future, the strength of the prediction depends on the quality of the historical evidence and on the reliability of the means used to gather and interpret it. She further argues that some of the companies Christensen characterized as upstarts had in fact been around for decades, and some of the incumbents which were supposedly disrupted would continue to dominate their industries for years to come. (The New Yorker, 2014)

Shortly after Lepore’s critical review on The Innovator’s Dilemma was published in The New Yorker, Nobel Prize winner Paul Krugman welcomed the historian’s criticism writing the following:

“And in trade, as in business competition, it’s far from clear that the big rewards go to those who trash the past and invent new stuff. What’s the most remarkable export success story out there? Surely it’s Germany, which manages to be an export powerhouse despite very high labor costs. How do the Germans do it? Not by constantly coming out with revolutionary new products, but by producing very high quality goods for which people are willing to pay premium prices. So here’s a revolutionary thought: maybe we need to do less disruption and put more effort into doing whatever we do well.” (The New Yorker, 2014)

Although the existing critique on Christensen’s theory of disruptive innovation do offer some strong arguments, they all acknowledge the fact that disruption does occur and that it’s challenges have to be dealt with one way or the other.
3. Meeting the challenges of disruptive innovation

March 2000, Harvard Business Review published an article by Christensen and Overdorf, under the title “Meeting the challenge of disruptive change”. (Harvard Business Review, 2000) Based on the same dilemma, why do so few established companies innovate successfully, the authors urge that the following questions should be answered in order to change this:

- **“Does my organization have the right resources to support this innovation?”**

Resources which used to support the business (people, technologies, product designs, brands and customer/supplier relationships) won’t necessarily match those required for new projects.

- **“Does my organization have the right processes to innovate?”**

Processes supporting the business in the past (decision-making protocols, coordination patterns) may set unwanted limits for new projects.

- **“Does my organization have the right values to innovate?”**

Being able to tolerate lower profit margins must be taken into consideration.

- **“What team and structure will best support our innovation effort?”**

It is important to have the right capabilities and organizational structure.

Although the concept of dynamic capabilities did not exist when he wrote “The Innovator’s dilemma” (first published in 1997, the year when Teece, Pisano and Shuen wrote “Dynamic capabilities and strategic management”), Christensen was acknowledging the importance of this factor, devoting one of the last chapters of his book to the capability issues, namely to the “migration of capabilities” and to “creating capabilities to cope with change”. According to Christensen, this last point could be achieved through three approaches (Christensen 1997):

- Creating capabilities through acquisitions,
- Creating new capabilities internally (a path he strongly advised against, as companies which had tried to run two very different businesses under the same roof had “a spotty track record”)

- Creating new capabilities through a spin-out organization.

Nevertheless, as we remember, the issue was revised in “The Innovator’s Solution”, where the authors divided the concept of capabilities in the three factors we recognize in the questions above: resources, processes and values. However, the authors were still regarding the issue of capabilities as a selection process in terms of how to find the best person for the job.

As we have learned so far, disruptive innovation may emerge initially inferior, but the innovator’s ability to develop emergent capabilities to adapt to endogenous and exogenous innovation drivers is critical (cf. McGrath, 2010 p.247).

In The Innovator’s Solution, the authors again begin their investigation from the idea that whereas established companies almost always win battles involving sustaining innovations – in the disk drive industry 111 out of 116 new technologies were sustaining innovations – the same companies almost always lost battles involving disruptive innovations (cf. Christensen / Raynor, 2003 p. 189-190). The authors use the RPV (capabilities in terms of resources, processes, values) framework to analyze why the performance of leading companies differ concerning the two tasks. However, regarding established companies, one may conclude that as these do not lack resources, the problem may lie in the way these resources are allocated or in its processes and/or values.

Also, the dynamic in terms of change in capabilities is brought in question as the authors suggest a framework (Figure 5) which should help managers decide when to exploit existing organizational capabilities and when it is necessary to create or acquire new ones:
Thus, the above suggested framework as well implies the necessity of capabilities monitoring in order to assess their availability and decide whether change or new capabilities are needed.

### 3.1. Capabilities, Organizational Capabilities, Dynamic Capabilities

However, before introducing the Capabilities Monitoring Model as a possible helping tool in meeting the challenges of disruptive innovation and also as many of the authors named so far seem to think that understanding and working with or developing frameworks based on capabilities is crucial in meetings these challenges, let’s first consider further descriptions and classifications of the term *capabilities*, the literature in the field offers.

Capabilities can be defined as the company’s ability to identify, integrate, develop and configure its own and others’ competences and resources to innovate (Teece et. al., 1997 p.83). Christensen defines capabilities in terms of processes,
resources and value systems (Christensen / Raynor, 2003 p.178). Capabilities can enable radical change when prior competences can be leveraged (Shane, 2000 p.450) or obstruct change when conditions amplify capabilities misfit (Barnet / Carrol, 1995 p.224).

Organizational capabilities are defined in many different ways by many authors. While some authors define organizational capabilities as “the capabilities of an enterprise to organize, manage, coordinate, or govern specific sets of activities” (Teece et al., 1997, p. 515), others define them as “a business’s ability to establish internal structures and processes that influence its members to create organization-specific competencies and thus enable the business to adapt to changing customer and strategic needs” (Ulrich, 1990, p.40). The latter definition comes close to Teece’s definition of Dynamic Capabilities as “the firm’s ability to integrate, build and reconfigure internal and external resources and competencies to address rapidly changing environments” (Teece et al., 1997, p. 516).

3.2. Capabilities Monitoring Model: A Dual Process Model of Capability Dynamization

As most of the so far named authors see the critical importance of capabilities when dealing with disruptive innovation, and also out of the need of a clearer and more structured approach considering the dynamization necessity of capabilities in the context of a rapidly changing environment, the following will present the Capabilities Monitoring Model (Eberl, 2009) as a possible helping tool in meeting the disruption challenges named above.

3.3. Background and Design

After analyzing the design behind the definitions of organizational and dynamic capabilities, the conclusion has been drawn that a new approach may be necessary (cf. Eberl, 2009 p.208). The grounds for a reconstruction of the existing input on dynamic capabilities have been thus based on systematical and thorough examination of the frameworks build around the concept. Eberl’s findings revealed
irritating contradictions concerning these frameworks, which the author tried to address by developing a new framework: the capabilities monitoring model.

In contrast to the dynamic capabilities structure, the capabilities monitoring model is based on the idea that patterned problem-solving processes and dynamization should be regarded as two different but simultaneously engaged forces. (Eberl, 2009, p. 209) Thus the author suggests a dual monitoring process model: on the one side the development monitoring of patterned problem-solving processes and on the other side the reflection monitoring of patterned problem-solving processes in terms of risk compensation. (Eberl, 2009, pp.209-221) In other words, as the one side will monitor and so ensure the right selection and development of problem-solving processes, the other side will screen for possible risks and so try to avoid an automatic fixation on traditionally successful problem-solving process. At a first glance, it might seem like the model may offer the perfect answer to the first two challenges: ensuring the right management of resources and processes by identifying threats and thus allowing precise responsive reactions.

Although it might seem complex, the logic behind the dual framework makes it easy to understand. The author argues that opposed to frameworks based on dynamic capabilities, patterned problem-solving and dynamization cannot be merged into one concept as these functions contradict each other by their conceptual nature. (Eberl, 2009 p.205) Therefore, by monitoring them simultaneously as two separate strategic functions, not only will this ensure an uninfluenced practice and development of the monitored capabilities, but also allow the focus on the scope of identifying threats in terms of capability rigidity drivers. Schreyögg and Eberl distinguish between three main rigidities which may pose as a threat to capabilities building: path dependence (lock-ins), structural inertia, and commitment (Schreyögg / Eberl, 2007 p.914). In short, the authors describe path dependency in terms of the history of the organization constraining its future behavior. Structural inertia is defined as the context where changes in organizations happened much slower than the rate at which the environment changes (Hannan / Freeman, 1984, p.151) and commitment is regarded as a
rigidity in terms of constrained flexibility due to needed investments (Schreyögg / Eberl, 2007 p.914).

Also, as monitoring will not be part of the capabilities practice (Eberl, 2009 p. 216), its reflective focus would be able to provide objective and fast conclusions.

The dual process of capability dynamization is visually explained by the authors in the following figure:

![Dual process model of capability dynamization](image)

Figure 6: A *dual process model of capability dynamization*. (Schreyögg / Eberl, 2007 p.926)

The figure above also shows that the monitoring in terms of risk compensation will distinguish between the observational and the operational level. While on the operational level the monitoring will have a more reflecting responsibility in terms of awareness, development and practice of patterned problem-solving processes, the
observational level will provide foresight concerning possible risks of capabilities falling into the trap of the rigidity factors named above. (Eberl, 2009 p. 212)

Another aspect visible in the above figure is the source of input for the capabilities monitoring model. The overall monitoring activity obviously looks for signals from both internal and external environment. As one can imagine how the monitoring of the external environment might be perceived as complex considering the multitude of outside factors which would have to be taken into consideration, past research on different crisis situations have delivered enough information as to make it possible to identify weak signals proceeding crisis situations. (Eberl, 2009 p.223-224)

The monitoring activity is supposed to address first of all the possible paradox-drivers identified above: path dependency, structural inertia and commitment. This threefold focus can be used for scanning the group, the unit, the division, and the corporate level, and possibly the cross impacts among these (Schreyögg / Eberl, 2007) as well as interactions with external factors. Figure 5 summarizes the features:

![Levels of capability practices](image)

Figure 7: *The focus of capability monitoring* (Schreyögg / Eberl, 2007 p.929)
However, in order to successfully achieve dynamization, an organization must also make sure it is capable of processing Information and thus identifying potential opportunities. (Eberl, 2009 p.240)

3.4. Implementation Strategy

So how does the actual monitoring work? The input provided so far may evoke the impression that implementing a capability monitoring system is a question of a complex technical design involving issues like time and money. However, investing time and money may be advisable as it could help the organization in targeting opportunities and threats – like those disruptive innovation may entail – and thus not only serving in maintaining its top position but also help in its growth path.

Eberl suggests two different possibilities of monitoring implementation: integrating monitoring through networking and/or through outsourcing, thus creating or hiring a detached organization (cf. Eberl, 2009 p.237).

Considering the problem of a too bride environment from which to collect information through monitoring, networking may be considered as an opportunity to collect data through connections which are already established within a company, but also to the outside world.

“Business Networking in the new economy can be seen as the coordination of processes within and across companies. More precisely, we define Business Networking as the management of IT-enabled relationships between internal and external business partners” (Fleisch / Alt, 2001 p.2)

Thus the monitoring process could obtain information from networking events, through tight business partner and/or client communication, social media etc. However, the organization and its workforce would have to be aware of the monitoring process and be open and willing to get involved. This is crucial as the capability relevant information could be intercepted by top management and lower levels altogether. (cf. Eberl, 2009, p. 235)
The second suggested way of monitoring implementation would be carried out through outsourcing the task by engaging another or several other organizations. Each possibility has of course it advantages and disadvantages. Thus when considering the networking implementation strategy, the problem may arise that one cannot be forced to get involved in the monitoring process of the organization. While it would spare the organization having to add new structures and allow a better overview and understanding of its own capabilities, it would also have to find ways of motivating and training its workforce to get involved. (cf. Eberl, 2009 p. 237) Therefore, outsourcing the monitoring task may be a less complex solution of implementation but would also need a very good understanding of the organizations structure and scope in order to be able to search for and deliver the necessary data.

After having found and implemented the best way to monitor capabilities, in order to achieve successful dynamization the gathered information would still need to be processed and conclusions drawn. The author argues this could be achieved in two phases (cf. Eberl, 2009 p. 242): Phase one would implicate developing projects and initiatives within decision making arenas, which would focus on translating and analyzing the through monitoring gathered input. The second phase would require Top-Management involvement in the form of a special monitoring committee, which would consider and evaluate the projects and initiatives and develop intervention strategies whenever thought necessary. (cf. Eberl, 2009 p.245)

An essential task to be considered while implementing the capabilities monitoring model is to skillfully handle the conflict which will arise (Figure 6) in case established capabilities will have to be replaced or adjusted as a result of monitoring.
However, having figured out what is wrong and how to change it makes the conflict about how to “delicately” replace what didn’t work anymore a smaller fish to fry.

3.5. Conclusions and Limitations

Having understood the profile, scope and implementation dimensions of the capabilities monitoring model, it does seem to be a fitting tool for questions the innovators dilemma left unanswered. It may have started as a suggestion to better design the dynamic capabilities framework but it also may have ended up offering an answer to the formulated challenges around the concept of disruptive innovation.

Looking back on the questions both the concept of disruptive innovation and the capabilities monitoring model are based on, significant similarities arise, already suggesting the frameworks are fighting the same battle. The Innovator’s Dilemma notices difficulties like constraints from focusing on investment issues and main
customers desires thus missing crucial opportunities, depending on historically successful strategy designs which may no longer apply or waiting too long until deciding whether to enter a market or not. The capabilities monitoring model calls the above named challenges rigidities in terms of commitment, path dependency and structural inertia.

Also, while suggesting which questions organizations should ask and where to look for answers, the authors concerned with disruptive innovations seem to turn to theories build around the concept of organizational and/or dynamic capabilities. Nevertheless, while the same authors focus more on individual capabilities in trying to fix the problem, what the capabilities monitoring model adds is one tool which allows a broad search spectra by putting the entire organization to work.

Nevertheless, practical case studies are needed, to explore concrete possibilities of implementation, regarding both established companies with complex structures as well as smaller disruptive companies.
4. IBM Case Study

Why IBM? In short, because it’s history provides both the role of a disruptor as well as the one of a disruptee. Also, one of the most important disruption events which offered the researchers the possibility to further analyze the phenomenon consisted in the Personal Computer disrupting the Mainframe Computers.

IBM was the first developer of disk drives in 1952 and while it dominated the mainframe computer market until 1970, it was disrupted by the emergence of the personal computers (cf. Capron / Mitchell, 2013 p. 61). As it had the resources, IBM joined the business later, setting up a semi-autonomous business unit and thus launching its new PC business. Nevertheless, the Personal Computer would begin as a consumer product, requiring a different business model than the one IBM had specialized on, selling mainframe computers to business companies. Therefore the organizational fit was low in the case of the new Personal Computer business (cf. Capron / Mitchell, 2013 p. 61), concluding in IBM finally selling off its personal computer units in 2005 to Lenovo, a Chinese personal computer manufacturer (cf. McKenzie, 2008 p. 195).

Another reason why IBM was chosen as the subject of the present case study is the fact that, as the main factor behind all of the above mentioned concepts, theories, reasons, problems and solutions is change (globalization, new technologies, change of capabilities etc.), IBM offers a history of over fifty years of transformation (cf. IBM, 2010 p. 8; cf. Capron / Mitchell, 2013 p. 61). The company went from being a disk drive and computer developer to the largest IT- and consulting company in the world. Not many other companies can offer this kind of a portfolio.

4.1. Methodology

The input for the current case study is offered by an exploratory research (cf. Saunders et al., 2009 pp. 139-140) in form of expert interviews with IBM top managers from different departments and different countries but also from additional information material like IBM C-level CEO case studies.
After the most relevant literature and its offered theories and examples had been consulted, analyzed and compared and after the main conclusions based on those theories have been drawn, the following exploratory research will offer further considerable input to support the thesis statement.

In preparing the set of questions, the following criteria were considered and set during a pretest interview with one of the selected IBM expert interview candidates:

- **Content:** considering the content, the questions were chosen based on the thesis statement and therefore focus on *The Innovator’s Dilemma* and the birth of the *disruptive innovation* concept, its challenges and the tested solution in form of capabilities monitoring.

  The pretest concluded that a more detailed questioning of the above would not have been possible in the context of the present thesis as more resources in terms of time and research tools had been required, thus exceeding the required structure and volume of the thesis.

- **Structure:** after establishing the content of the questionnaire, structuring it in three different chapters would offer the interviewees the possibility to understand the focus behind the questions and at the same time allow a short informative introduction at the beginning of each chapter.

- **Time:** the pretest also concluded that the interview should not take longer than a maximum of thirty minutes.

After creating the questionnaire the next important step was to find the qualified interview partners within IBM. IBM intranet access made the expert search process easier as it was possible to apply field (Risk Assessment, Innovation, Sales) and position (top management) filters and come up with a list of appropriate candidates. A total of eighteen candidates (see attached interviewees list) were selected, based on their qualifications and position within the company, each one of them receiving the interview request and questionnaire via email (see attached email request). Two replies were received within a week. A reminder email was sent, after which one more reply were received. After receiving the confirmation for the interview, three telephone interview dates were scheduled within the next ten
days. Each of four the candidates sent the completed questionnaire as a preview for the scheduled telephone interviews. Each interview lasted approximately 25 Minutes.

Considering the thesis subject, *The Capabilities Monitoring Model, meeting the challenges of Disruptive Innovation*, the expert interviews are meant to offer professional and practical insight on the main ideas and conclusions the above subject is based on.

The following chapter will offer the report of the interviews in respect to the thesis statement and explored theories.

### 4.2. Case Study Report

- Chapter one: The Innovator’s Dilemma and the birth of the disruptive innovation concept.

The first question the IBM professionals were asked to answer involves identifying the most challenging factors IBM encountered in the past, while dealing with disruptive innovation threats. Brig Serman, IBM Chief Executive Officer for Global Mid-Market Sales and Business Development, provided great input on this matter:

*“An example of a disruptive threat is the recent transition to cloud computing. While a great opportunity for IBM that aligns well to our technical strengths, it was counter to established lines of business and our financial model. The key challenges that we faced include recognizing the opportunity, understanding how to position it within our overall business and how to transition away from legacy lines of business that were being disrupted.”*

As the CEO commented upon the recent case of disruptive innovation in form of cloud computing, a disruptive business model innovation (cf. Snowden, 2010 p. 8), not only does he acknowledge the fact that despite past encounters, challenges of disruption still pose a threat for the company, but also identifies several factors making IBM vulnerable to the threat.

*“Cloud Computing refers to the hardware, systems software, and applications delivered as services over the Internet.”* (cf. Antonopoulos / Gillam, 2010 p. 3)
Although, as Serman argues, a great opportunity which also matches IBM’s technical strengths, thus admitting to the company actually not lacking the resources, it was Amazon which first introduced the concept in 2006 (cf. Forbes, 2013).

According to the CEO’s insight, the reason for IBM not having recognized the opportunity in time was due to it not being in alignment with IBM’s established lines of business and financial model. In other words, the challenges encountered consist in established processes and commitment towards investors. The CEO, underlines his statement by adding that what IBM needs to learn is how to position new opportunities within IBM’s overall business and how to depart from traditional processes disrupted in the past. This seems to resemble the circumstance of low organizational fit encountered in the case of the Personal Computer disrupting the Mainframe Computer.

Serman’s standpoint is also sustained by Simon Porter, IBM Vice President Mid-Market Sales Europe. The VP adds:

“In my 28 years in the company there have been a number of disruptive innovations – most notably the Personal Computer, Open Source software, Off Shore sourcing, Cloud computing. The challenging factors around each of these I think was

1. The speed with which it took a large global company like IBM to realize the genuine competitive threat these were making – sometimes too easy to stay under the radar, and something needs to be generating billions of dollars to be perceived as a global threat to IBM, and by the time they are recognized as competitive they are too big.

2. The solution IBM takes needs to be different, can’t be a straight copy, so it takes some time to develop the alternative.

3. Often the competitors are most successful in the Small & Medium Business segment first, which is not the strength of IBM historically.”
The above statement also identifies what the theory called *structural inertia* (the slow change in organization in relation to the change rate of the environment) as a challenging factor.

Moving on to the second question of the first chapter, investigating IBM strengths in dealing with challenges of disruption, the two experts also agree by stating that it was IBM’s global presence, financial strength and stability and the scope and breadth of the company’s offerings which allows the easy market entry and permit it to be a strong competitor. Thus one may conclude that as company does not lack the resources, but on the contrary, consider these its strength in dealing with disruptive innovation, it also draws strength from commitment towards investment as it allows it the liberty of becoming a strong competitor despite late market entrance.

- **Chapter two: Who is responsible?**

This chapter of the questionnaire is meant to investigate where the power of influence lies when it comes to dealing with challenges of disruptive innovation. As the pretest interview had established the main role players which would be considered in IBM’s case, this question offered the multiple choice answer possibility. Therefore the interviewees would assess the role importance of main clients, CEO’s and their management team, market data and IBM in terms of capabilities (resources, processes and values).

While the answers of the interview candidates seemed to have matched so far, this part will offer different points of view.

The candidates were asked to consider different perspectives in answering the question. Thus, the first question requested the candidates to identify the most important role players in the given case of dealing with having missed a disruptive innovation opportunity. VP Porter and McFadzean, IBM Senior Manager for Product Development, stated that CEO’s have the responsibility of finding out why an opportunity was missed and which steps should follow. The CEO himself stated
that he would turn to market data in order to establish whether the risk is still worth taking.

The second question asked the interviewees to identify the most important role players in the given case of having to assume (or not) the risk of investing in a new project. While the CEO answered that it would be a CEO’s responsibility to prove whether the risk is worth taking or not, adding that he would previously receive the essential input from its management team, the VP answered that the input would have to be collected through market analysis. A third point of view was offered by the Senior Manager, who argued that main clients would be the main source of input.

For a more focused perspective, the next question relates to IBM’s business processes, exploring the IBM’s leaders’ point of view regarding the association between traditional approach and change necessity. Therefore, the interviewees were asked to state whether they agree or not to the fact that processes supporting the business in the past may set unwanted limits for new projects.

Surprisingly, although having stated that IBM would have to transition away from legacy lines of business, the CEO now argues that he does not agree with the above statement: “No, in IBM we have a culture of innovation and strategic risk taking. Our business processes enable this approach.” Considering the CEO’s contradictory answers, one may conclude that the reason lies in a personal involvement and commitment towards traditional approaches.

Disapproving with their colleague and consistent with their previous statements, the VP and Senior Manager both agreed with the statement and argued as follows:

VP: “Yes, often short term financial objectives prevent investment in new areas/products that by their nature have a longer term of return, outside of the immediate financial objectives.”

Senior Manager: “Yes absolutely - new technologies such as mobile change the way applications and software need to be developed and this means that existing processes and development methods have to change to keep up. I see many of
our clients and IBM adopting agile project management and development methods to cope. Unfortunately in the banking and finance industry - regulation puts some limits on that and IBM itself is a little slow to change processes, where it gets in the way of progress - I do think smaller companies unbound by internal processes are better able to cope with disruptive technology.”

- Chapter three: Monitoring Capabilities

Considering the last chapter of the questionnaire, the purpose of the first question was to investigate the importance awareness related to monitoring of capabilities in terms of the organization’s resources, processes and values. However, as it was expected, the candidates associated different scopes with the concept of capabilities monitoring than the current thesis involves. Thus, the CEO related the concept of capabilities monitoring to measurement of objectives achievement, in terms of impact and return of investment of the new-growth opportunity:

“A key risk, when pursuing new innovations and market opportunities, is knowing if you are achieving your objectives. You must be able to measure the impact and return on investment of the new-growth opportunity. Otherwise, you don’t know whether to continue investing or divert to other opportunities.”

However, he did admit capabilities monitoring to be highly important.

The VP agrees in grading capabilities monitoring as highly important and states that new-growth is fundamental to future prosperity, thus relating monitoring to processes leading to new-growth projects.

A similar third position is offered by the Senior Manager:

“It is essential to constantly look for leaner processes in the organization and to be open to investing in in new ideas. Having said that, the cost / benefit analysis remains important.”

The last question of the chapter and questionnaire expects the candidates to identify strategy input sources for the search and processing of growth opportunities. Again, the interpretation of the scope behind this question allows clean insight.
Thus, the VP identifies the following as above mentioned: market intelligence, consultants, existing clients and business partners.

Further relevant input regarding the importance and also implementation strategy of monitoring may be highlighted by referring to IBM’s C-level CEO studies. 2004, the company started conducting global surveys and studies with top managers of different companies. These would take place every two years and represent a very important monitoring tool, providing answers to questions on what CEO’s think, which problems stimulate them and how do they cope with change and challenges (IBM, 2010 p. 167). The title of the 2010 CEO study is *Leading Through Connections* and offers valuable insights from over 1,700 CEO’s worldwide to how they are prioritizing the creation of more impactful connections with their employees, their customers and their partners. “*It is part of an ongoing commitment by IBM Global Business Services to provide analysis and viewpoints that help companies realize business value*” (IBM, 2014).

Thus further studies should also concentrate on whether the adopted strategies like the above mentioned fit the implementation strategy of the capabilities monitoring model and whether adapting the model to fit a large company’s needs and deficiencies is possible and what that process would concretely have to entail.

### 4.3. Case Study Limitations

As the volume of the current thesis wouldn’t permit a more in-depth research, the questionnaire was limited to finding answers to the overarching concepts and describing IMB’s experience with disruptive innovation. Furthermore, it allowed for a certification of awareness of the questioned theories and proof that the capabilities monitoring model as a tool would indeed find use in the battle against challenges of disruptive innovations. Further practical studies are however necessary to test the validity of the model’s implementation strategy also in comparison to other existing tools.
5. Wrap-up

In an attempt of collecting, analyzing, comparing and testing the most significant observations, ideas, highly debated theories and solutions, the originality of the current thesis consists in the effort of bringing clarity in terms of theoretical grounds and most importantly offering a new perspective of use for the presented tool. Therefore, on one hand, theoretical research on The Innovator’s Dilemma and the birth and development of the disruptive innovation concept focused on pinpointing and describing the concrete causes and challenges companies have proven to face, while on the other hand, introducing the capabilities monitoring model as a possible solution.

5.1. Conclusions

While the dilemma around disruptive innovation exposed the reasons why established companies fail and where executives should look for answers, it concentrated on capabilities in terms of influenced decisions and little on how to concretely work around what is obviously not working. The current thesis does not intend to disapprove with the fact that identifying what causes what cannot be a significant guiding tool for executives and organizations coping with the challenges of disruptive innovations. Christensen’s input has proven to be a very valuable help, as identifying the problem is a significant if not the most important step in solving it.

However, since it has also been proven that despite having identified the challenges, companies, especially large ones like IBM, still seem to avoid venturing into disruptive innovation dimensions and complaining about not being able to depart from what is keeping their necessary change rhythm slow, the dynamization process should consist of a combination of focused monitoring with the option of both internal as well as external tools and levels of implementation and concrete change measures as soon as alarm signals rise.

The path directing the research which led to the above conclusions was based on the following three factors: a dilemma (disruptive innovation causing successful
companies to fail), a tool (capabilities monitoring model) and a company (IBM). The actual walking the path meant finding the common ground between them and as soon as that step was completed, to connect them. As far as the common ground is concerned, it was established that, although the factors would use different terms of description, they would all express the same. Concretely, The Innovator’s Dilemma asked the question why successful companies fail when confronted with the challenges of disruptive innovation. After having identified the challenges and while exploring the Capabilities Monitoring Model, it became clear that it was a tool developed to specifically locate and thus offering the possibility to confront the same challenges. Furthermore IBM was chosen as a subject on which the above findings could be tested on, as it had already proven to be a patient with the same symptoms: path dependency, commitment and structural inertia. While the case study report confirmed the fit, future complex tests and implementation seem a reasonable advice.

5.2. Potential Impact and Forecast

The potential impact may consist in the challenges of finding a compatible implementation strategy for the capabilities monitoring model to suit the company’s size, structure and values but most importantly in the concrete results the model would offer. While both theoretical results as well as the case study report conclude that the size and historical development of an organization makes a considerable difference, the monitoring may come to drastic conclusions like the necessity of radical structural change.
6. Bibliography


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7. Appendixes

Appendix 1

The following questionnaire was sent to a list of 18 top management of IBM:

The questionnaire is sectioned in three short chapters, each chapter containing a short informative introduction and two questions. Please consider your personal experience within IBM when answering.

Chapter 3: Monitoring capabilities

About capabilities: Please consider the dynamic capability of resources, processes and values within IBM

*Question 1:* on a scale of 1 to 5 (1 not important; 5 highly important), how important is monitoring the company’s capabilities in terms of new-growth? *Please comment on your answer.*

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Comment:

*Question 2:* When considering the search and processing of growth opportunities, which strategy instruments come to mind?

Answer:
## Appendix 2

List of persons that replied to the questionnaire:

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<tr>
<th>Name</th>
<th>Position in IBM Deutschland</th>
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<tr>
<td>1. Brig Serman</td>
<td>IBM Chief Executive Officer for Global Mid-Market Sales and Business Development</td>
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<td>2. Simon Porter</td>
<td>IBM Vice President Mid-Market Sales Europe</td>
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<td>3. John McFadzean</td>
<td>IBM Senior Manager for Product Development</td>
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Appendix 3

Interview Answer Brig Serman (CEO):

Chapter One: The Innovator’s Dilemma and the birth of the disruptive innovation concept.

Dilemma: Leading companies failing to stay at the top of their industries when new technologies are developed or markets change.

Disruptive Innovation: describes a process by which a product or service takes root initially at the bottom of a market and then relentlessly moves up market displacing established competitors.

Question 1: If you were to name the most challenging factors IBM encountered in the past when dealing with disruption threats, which would those be?

Answer: An example of a disruptive threat is the recent transition to cloud computing. While a great opportunity for IBM that aligns well to our technical strengths, it was counter to established lines of business and our financial model. The key challenges that we faced include recognizing the opportunity, understanding how to position it within our overall business and how to transition away from legacy lines of business that were being disrupted.

Question 2: Which were/are IBM’s strengths which helped dealing with the above named challenges?

Answer: The scope and breadth of our offerings are key in our ability to compete in Cloud Computing. Our cash reserves have enabled us to acquire key technologies that make us even more relevant in this space. The financial stability of IBM has also brought a level of confidence to those companies looking to transition to the cloud.

Chapter two: Who is responsible?

Question 1: In your opinion, who has more influence when it comes to dealing with challenges of disruption? Please consider the two possible perspectives.

Reaction Perspective: Where do decision makers look for input in the given case of having to deal with having missed an opportunity?
Main clients

Partners

CEO’s (manager team) vision and capabilities

X Market data

IBM

Other

**Action Perspective:** Where do decision makers look for input in the given case of having to decide whether to take a risk or not?

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**Question 2:** Processes supporting the business in the past may set unwanted limits for new projects. Do you agree? Please explain your answer.

**Answer:** No, in IBM, we have a culture of innovation and strategic risk taking. Our business processes enable this approach.
Chapter 3: Monitoring capabilities

About capabilities: Please consider the dynamic capability of resources, processes and values within IBM

Question 1: on a scale of 1 to 5 (1 not important; 5 highly important), how important is monitoring the company’s capabilities in terms of new-growth? Please comment on your answer.

|   |   |   |   |   | X |

Comment: A key risk when pursuing new innovations and market opportunities is knowing if you are achieving your objectives. You must be able to measure the impact and return on investment of the new-growth opportunity. Otherwise, you don’t know whether to continue investing or divert to other opportunities.

Question 2: When considering the search and processing of growth opportunities, which strategy instruments come to mind?

Answer: Growth opportunities should fit within a broader corporate framework. That framework must articulate the short and long term vision of the company and why investors should look to IBM as a long term financial investment. Any new project should support that broader vision. If it’s a disruptive technology, that may cause the corporate vision to evolve and mature over time to reflect these disruptions in the market.
Appendix 4

Interview Answer Simon Porter (VP)

Chapter One: The Innovator’s Dilemma and the birth of the disruptive innovation concept.

Dilemma: Leading companies failing to stay at the top of their industries when new technologies are developed or markets change.

Disruptive Innovation: describes a process by which a product or service takes root initially at the bottom of a market and then relentlessly moves up market displacing established competitors.

Question 1: If you were to name the most challenging factors IBM encountered in the past when dealing with disruption threats, which would those be?

Answer: In my 28 years in the company there have been a number – most notably the Personal Computer, Open Source software, Off Shore sourcing, Cloud computing. The challenging factors around each of these I think was

1. the speed with which it took a large global company like IBM to realize the genuine competitive threat these were making – sometimes too easy to stay under the radar, and something needs to be generating billions of dollars to be perceived as a global threat to IBM, and by the time they are recognized as competitive they are too big.

2. The solution IBM takes needs to be different, can't be a straight copy, so takes some time to develop the alternative.

3. Often the competitors are most successful in the Small & medium Business segment first, which is not the strength of IBM historically.

Question 2: Which were/are IBM’s strengths which helped dealing with the above named challenges?

Answer: 1. IBM’s global presence and financial strength to develop something new and different allows for easy market entry when ready.
Chapter two: Who is responsible?

**Question 1: In your opinion, who has more influence when it comes to dealing with challenges of disruption? Please consider the two possible perspectives.**

**Reaction Perspective:** Where do decision makers look for input in the given case of having to deal with having missed an opportunity?

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**Action Perspective:** Where do decision makers look for input in the given case of having to decide whether to take a risk or not?

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**Question 2:** Processes supporting the business in the past may set unwanted limits for new projects. Do you agree? Please explain your answer.

**Answer:** Yes, often short term financial objectives prevent investment in new areas/products that by their nature have a longer term return, outside of the immediate financial objectives.

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**Chapter 3: Monitoring capabilities**

About capabilities: Please consider the dynamic capability of resources, processes and values within IBM

**Question 1:** on a scale of 1 to 5 (1 not important; 5 highly important), how important is monitoring the company’s capabilities in terms of new-growth? Please comment on your answer.

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Comment: new growth is fundamental to future prosperity. Not a 5 as a company can still sell to existing clients but cannot do that forever, there is a need for some new business / growth

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**Question 2:** When considering the search and processing of growth opportunities, which strategy instruments come to mind?

**Answer:** Market intelligence / consultants / existing clients and business partners.
Appendix 5

Interview Answer John McFadzean (Senior Manager)

Chapter One: The Innovator’s Dilemma and the birth of the disruptive innovation concept.

Dilemma: Leading companies failing to stay at the top of their industries when new technologies are developed or markets change.

Disruptive Innovation: describes a process by which a product or service takes root initially at the bottom of a market and then relentlessly moves up market displacing established competitors.

Question 1: If you were to name the most challenging factors IBM encountered in the past when dealing with disruption threats, which would those be?

Answer:

In the past I would say the explosion of cheap PC's and losing out to Microsoft in the operating system market were the biggest drivers to change. I class these as disruptive because, Microsoft was a relatively small player until it invested in Windows.

Question 2: Which were/are IBM's strengths which helped dealing with the above named challenges?

Answer:

Its investors and management were able to refocus on services, The company has always had bright and flexible people - and the investors and senior management enabled IBM to transform itself into a much more services oriented company.

The executives have invested billions in cloud and mobile technology which reaps rewards on the services business.
Chapter two: Who is responsible?

**Question 1: In your opinion, who has more influence when it comes to dealing with challenges of disruption? Please consider the two possible perspectives.**

**Reaction Perspective:** Where do decision makers look for input in the given case of having to deal with having missed an opportunity?

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Question 2: Processes supporting the business in the past may set unwanted limits for new projects. Do you agree? Please explain your answer.

Answer: Yes absolutely - new technologies such as mobile change the way applications and software need to be developed and this means that existing processes and development methods have to change to keep up.

I see many of our clients and IBM adopting agile project management and development methods to cope

Unfortunately in the banking and finance industry - regulation puts some limits on that and IBM itself is a little slow to change process where it gets in the way of progress - I do think smaller companies unbound by internal processes are better able to cope with disruptive technology.

Chapter 3: Monitoring capabilities

About capabilities: Please consider the dynamic capability of resources, processes and values within IBM

Question 1: on a scale of 1 to 5 (1 not important; 5 highly important), how important is monitoring the company’s capabilities in terms of new-growth? Please comment on your answer.

1 2 3 4 5 x

Comment: It is essential to constantly look for leaner processes in the organization and to be open to investing in new ideas. Having said that cost/benefit analysis remains important - I see far too many defensive acquisitions in the tech business (e.g. Facebook and WhatsApp)

Question 2: When considering the search and processing of growth opportunities, which strategy instruments come to mind?

Answer:

For IBM it seems to be about aggressive acquisition mixed with some organic growth in key areas. I think it is really important that new developments and acquisitions are driven by growth considerations and not just defensive reasons.