

Aalborg University

Disruptive Innovation

Analysis of academic work

Matej Masár
[Zadajte dátum]

Contents

Introduction	2
Methodology	3
Entrepreneurial opportunities	5
Shumpeter-Kirzner Summary	7
Innovations.....	8
Disruptive Innovation	10
DI visualization	12
Visualization of the market DI definition.....	13
Visualization of the market DI definition cont.....	14
Misunderstanding the DI theory.....	17
Practical Entrepreneurial Outcomes	19
Predicting DI	19
Incumbent Defense Strategies	22
Promising further research areas.....	23
Conclusion	24
Abbreviations	25
Table of Figures.....	26
Bibliography	27

Introduction

Disruptive Innovation is one of the most topical phenomena of the 21st century in both academia and business environment. General public has seen a boom of DI news in 2010s when the number of popular press articles soared in an exponential growth (Christensen, et al., 2018, p. 1046). Disruptive innovation (DI) became somewhat of a buzzword mentioned extensively in business magazines and entrepreneurial discussions. It would seem that any major breakthrough is described as disruptive nowadays. That can do more harm than intended. Facts from the actual theory of DI are barely noticed in news which can be alarming. Therefore it is necessary to inform about the true nature of disruptive innovations

This paper delves into the core ideas of DI theory in search for to answer the question of what makes an innovation disruptive.

Methodology

The aim of this paper is to concisely and in a simple manner inform and discuss the current knowledge on DI. The exact research questions posed are: What makes an innovation disruptive? How are disruptive innovations defined? How can disruptive innovations be identified? The open ended questions assume that there is not one right way to explain and describe the phenomenon of DI. It is also possible that a definitive answer to these questions doesn't exist.

Additionally the link between theory and practice is explored with the goal of assessing how disruptive innovation can be preemptively identified and this information used to as an advantage.

This paper answers questions by a thorough bibliographic analysis. Literature search had two main stages. At first academic papers from the field of disruptive innovation were accessed through literature databases, namely Google Scholar, Web of Science and the library portal of Aalborg University (AAU). Google search engine allowed for wide and flexible search options providing also less academic sources as news and shorter articles. On the other hand Web of Science houses solely academic work. This database allowed for filtering by academic fields which helped to narrow down on managerial and business articles. AAU library portal encompasses a variety of databases substantially enlarging the available literature for this project. It was however most effective to look for specific articles and books on the AAU portal as opposed to a wide general search.

Keywords searched were "disruptive innovation" and slight variants of the terms with the additions of ". There was plentiful literature which matched this criterion. The preliminary filtering of articles was by name assessment. Titles and subtitles already provided enough information to discard sources unfit for this particular study e.g. literature describing technical aspects or focusing on a specific DI example. Next filtering round consisted of a slower and more tedious analysis of abstracts, introductions and conclusions. Not every single eligible article could have been assessed due to time and resource constrains. At this point the general and more wide opened search stage was complete with fundamental literature and authors already identified.

The second literature search phase was based on the already acquired sources. In the form of citations it would then help identify more key literature. With the

combine strength of three search options all additional sources were easily collected throughout the course of writing this paper.

Entrepreneurial opportunities

Before delving into the theory of DI it is wise to first explore the bigger picture. DI as well as innovation in general is an opportunity used in entrepreneurship and business management. The theory of DI could be described as a specific opportunity identification tool for entrepreneurs and managers. This chapter briefly discusses the types of opportunities available in world of business. As a matter of fact academics have identified two main views on where entrepreneurial opportunities arise (Shane and Venkataraman 2000).

The first describes entrepreneurs as innovators who combine knowledge to create previously unseen outcomes. This is widely known as Schumpeter's view. It was developed in 1934 and argues that opportunities arise from the entrepreneur himself and his ability to alter the marketplace. The entrepreneur is said to be an innovator who 'shocks and disturbs economic equilibrium' in times of technological change. This describes the famous term 'creative destruction'.

In Schumpeter's theory change takes place in technology, regulation, social, political trends or other macroeconomic factors. The opportunities are "innovative and break away from existing knowledge" (Jong & Zoetermeer, 2010, p. 7). The old in the form of products, processes, services, technology, materials etc. become outdated and inferior with the introduction of entrepreneurial novelty. New market creation and setting trends is closely related to Schumpeterian view. Basically Schumpeter's entrepreneur moves the economy further from equilibrium and disrupts it. In this view economy starts in equilibrium with perfect information and no space for arbitrage. The only way to succeed in such environment is to bring something new. Entrepreneur is the disruptive factor bringing change bringing something completely new to the market (Shane, 2003, p. 21).

On the opposite spectrum to creative destruction is Kirzner's view originating in 1973. He, as opposed to Schumpeter, argues that entrepreneurs secure profits from outside sources the entrepreneur is able "to see where a good can be sold at a price higher than that for which it can be bought" (Kirzner, 1973, p. 14). Kirzner's opportunities arise from arbitrage, imitation and information asymmetry. Innovation is not a necessity in his view of marketplace. No macroeconomic changes occur because sustaining development takes place in equilibrium. Here the entrepreneur doesn't necessarily bring anything new. The advantage is made by identification of favorable pricing. Imperfect knowledge allows for entrepreneurial opportunities to arise. Information asymmetry is the main feature of Kirzner's

theory. These opportunities tend to be less innovative in their nature since they replicate what already exists. Entrepreneurs' role is to be alert for and ready to act as new information surfaces. Kirzner's so called "pure entrepreneur" doesn't own any resources at all. Due to the opportunities of arbitrage profits can be made by buying cheap and selling on profit. Market imperfections are what allows pure entrepreneur to thrive. Time is of the essence since opportunities disappear as fast as they arise. Kirzner based his pure entrepreneur in the stock market environment which gives the theory perfect sense. However in reality Kirznerian opportunities don't come as all or nothing split second choices at the stock market. Even a pure entrepreneur encompasses some amount of innovativeness. These innovations are viewed as incremental i.e. small improvements are brought but no striking novelty is seen. Incremental changes work towards economic equilibrium, therefore have sustaining forces on markets. Kirzner points out that competitive nature of markets brings economy towards equilibrium (Shane, 2003, p. 21).

These two entrepreneurial methods complement each other in a nearly perfect way. Depending on which opportunities an entrepreneur pursues he can be referred to as a strong (Schumpeter's innovator) or weak (Kirzner's arbitrager). In his book "*A General Theory of Entrepreneurship*" (2003) Shane discusses the likelihood of either method being implied. The business opportunities definitely aren't evenly distributed between Schumpeterian and Kirznerian. To create, innovate and disrupt is indeed rarer to witness in the business world. This is in line with Schumpeter's own words because he describes entrepreneurs as unique individuals. In reality most business opportunities arise from what has been established and done before. Innovation breakthroughs are sought and highly valued but they are hardly the majority of economic performance. Most entrepreneurs and businesses stick their old ways and/or imitate the success of breakthrough innovators. In a nutshell entrepreneurs have two choices, to bring something new or work with what has already been introduced (Jong & Zoetermeer, 2010). The table below shows how the two entrepreneurial views are complimenting each other by indicating some of their bipolar attributes.

Table 1: Schumpeter-Kirzner views bipolarity, adopted from Shane 2003

Schumpeterian view:	Kirznerian view:
Innovating	Imitating
Away from equilibrium	Towards equilibrium
Rare	Common
Creative	Passive
Novelty	Sustaining
New information	Established information

Shumpeter-Kirzner Summary

This chapter discussed the current views of entrepreneurial opportunity. All in all, there are two widely acknowledged but bipolar perspectives. Schumpeterian innovative entrepreneur is viewed as the force of change bringing never before seen knowledge, disrupting and setting trends. This concept is further explored in the coming chapters as it naturally ties into the concept of disruptive innovation. Kirzner brought a counterpart of the innovator entrepreneur. His opportunities repeat what was already done or in other words imitate. Only incremental innovation takes place, entrepreneurs are passive. This view will further be brought up throughout this paper mostly to highlight the opposite nature to DI.

In reality it is agreed upon that both above discussed views shape entrepreneurial opportunities. As a rule of thumb strong entrepreneurship is more valued worldwide with governments supporting the efforts of creative destruction. The main reason for this is the fact that actions of Schumpeterian entrepreneur yield better long term growth while Kirznerian opportunities are short sighted (Stam, 2008). This does not however mean that weak entrepreneurship isn't viable. As a matter of fact passive entrepreneurship which imitates instead of innovating ensures innovation diffusion. *"Without imitation the social and economic impact of innovation would matter much less"* (Fagerberg, 2013, p. 10). It seems that the capitalist system is built on two entrepreneurial types, creative and passive. Both of entrepreneurial ways complement each other and it is hard to imagine the business world without either of them (Jong & Zoetermeer, 2010, p. 24).

Innovations

Before delving into DI itself this section will give a quick overview of the theory of innovation in general. Last chapter noted that innovation is without doubt a necessary part of entrepreneurship. But not all innovation is equal as argued in the discussion of Schumpeterian and Kirznerian views. Previous section introduces two vastly contrasting ways of conducting business. On one hand Schumpeterian strong entrepreneurship encompasses breakthrough innovation, which brings substantial change to the business environment. Weak entrepreneurship of Kirzner lies on the opposite side of innovation spectrum in the form of incremental innovations. These bring only marginal and hardly noticeable changes to the marketplace. Let's start with explaining what innovation is.

The term innovation is widely understood in English language as "*the introduction of new things, ideas or ways of doing something*" as described in the Oxford Dictionary. Academics and other authors do not deviate from this explanation and describe innovation as introduction of some novelty. The amount of available definitions for the term innovation is practically endless. Majority of the definitions are simple and short, describing innovation as "*the process of developing and implementing a new idea*" (Van de Ven, et al., 1999, p. 9) or "*the practical implementation of an idea into a new device or process*" (Schilling, 2013, p. 18). Then there are academics that bring the definition closer to business vocabulary. Some examples of this depict innovations as "*the development and intentional introduction of new and useful ideas by individuals, teams, and organizations...*" (Bledow, et al., 2009, p. 305) and "*an invention which has reached market introduction in the case of a new product, or first used in a production process, in the case of a process innovation*" (Utterback, 1971, p. 77). All of the definitions mention some kind of novelty.

Academics and entrepreneurs among others have contributed with more nuanced and detailed explanations, each aiming to elaborate on one or more aspects of this phenomenon. Some highlight the reasons for firms to utilize innovation, others who is innovating or what is being created. This paper works with the definitions taught in business schools and entrepreneurial academic programs. The easiest way to understand innovation is by comparing it to something similar yet different. An idea is the precursor of innovation. Ideas are something of value that can be sold in the capitalistic system for a profit. In the sphere of business however, an idea is not enough. To take an advantage of ideas they have to be introduced in the marketplace. When ideas are successfully utilized in a market then they become

innovations. *“An invention is an idea, a sketch or a model for a new or improved device, product, process or system. Such inventions may often (not always) be patented but they do not necessarily lead to technical innovations. In fact the majority do not. An innovation in the economic sense is accomplished only with the first commercial transaction involving the new product, process system or device, although the word is used also to describe the whole process”* (Freeman & L., 1997, p. 6). The most important factor of understanding innovation is its intangible nature. Innovation is a process it takes time to develop an idea to a fully-fledged innovation. The easiest way of understanding the concept of innovation is to take as tangible example as possible. *“Innovation is the process that turns an idea into value for the customer and results in sustainable profit for the enterprise”* (Carlson & Wilmot, 2006, p. 4).

Innovations can be divided into four distinct dimensions. *“Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace”* (Baregheh, et al., 2009, p. 1334). Product innovation is changes of products and services offered. First two are straight forward. Process innovation is changing in the way products and services are created and delivered. The latter two innovation dimensions are more intangible and more conceptual. Position is change in the context of the products and services offered. It is positioning differently on the market place which can e.g. the firm targets different customer. Appealing to a different market segment is rebranding the company image in the public eye. Paradigm innovation is increasing the scope of change even further. In this last innovation dimension the firm completely changes the underlying business models and completely changes what the enterprise does. Changing the industry it used to operate in to a new one.

This short summary barely scratched the surface of the enormous innovation field of study. It depicts how varied the definitions of innovations can get. The following chapters will narrow down the lens and focus solely on disruptive innovation.

Disruptive Innovation

Schumpeter's creative destruction described in his 1942 book is believed to be the original point where the idea of DI was conceived. Schumpeter described that something new makes the old obsolete which marks unprecedented changes the marketplace. The first fully fledged DI theory was described in 1995 by Bower and Christensen. This theory was based on technological change explained through the relationships of companies, their products and customers that emerge in a marketplace. The theory rose from the need of understanding current market changes. There was an intriguing pattern of company failure on the marketplace but the underlying causes were unknown. Big established enterprises would lose competitively to smaller and younger firms with much fewer resources at hand. There was a great incentive to describe the effects taking place on markets where competitive forces completely shifted. This phenomenon was most visible in computer industry and technologies. That is why Christensen and colleagues started with the disruptive innovation research in the computer mainframe industry. This particular industry was known for swift technology improvements before unseen. Therefore it provided a valuable source of real time exemplars. Companies were observed to thrive for mere years before succumbing to a new technological advancement (Christensen, et al., 2018, p. 1047).

Christensen identified a fundamental flaw in the mindset of incumbent companies. Their objective was serving solely their current customers. These companies kept to what their customers were accustomed to at the time. According to Bower and Christensen this skewed the management decision making. As a result only incremental innovation was financed in these firms. Innovation opportunities with higher creative value were left underdeveloped due to lack of investments. Since these companies focused on their current customer segments they neglected future opportunities. This research therefore concluded that as an entrepreneur, your own customers you're your business ignore technologies of the future and Schumpeterian innovation (Bower & Christensen, 1995, p. 43). Common market analysis doesn't enable disruptiveness and can even harm it (Thomond & Lettice, 2002)

Potential disruptive products are not meant for a mainstream market at first. However, in time they will overcome their deficiencies to compete with the currently baseline technology. The originally niche products catch the attention of mainstream customers. At this point the disruption occurred. (Bower & Christensen, 1995, p. 43)

The difference of emerging technologies is distinct package value/ attributes not useful in mainstream market. However these attributes and values keep improving so that in time they become attractive even for the mainstream customer. (Bower & Christensen, 1995, p. 44)

Mainstream customers value some given attributes of the product they're buying. Disruptive products lack quality in these particular attributes. However they bring completely you value and overtime they develop quality even in the mainstream attributes. Since disruptive products cannot be used by mainstream customers, these products find their place in emerging markets which see new and different utilization of these products. (Bower & Christensen, 1995, p. 45)

Eventually descriptive technologies seem financially unattractive to established firms. This is mainly the fact that emerging and niche markets project little revenue (lower profit margins). Long term projections are impossible to assess at the earlier stages (Bower & Christensen, 1995, p. 47).

The main idea of disruptive technology is to meet "*performance demanded by the established market*", to intersect market performance demand line. At this point the product becomes viable mainstream. Disruption is not about better performing products with more volume customer. It is about meeting the current market and therefore increasing competitiveness with current players.

(Bower & Christensen, 1995, p. 49-50)

Major technology overperformance in the mainstream market. Customers aren't interested in this new product. Then it's about whether the potential disruptive technology improves faster than bandit performance at the market. Only when the new technology meets this demand can it be called disruptive.

(Bower & Christensen, 1995, p. 50)

DI visualization

This framework is a visualization of market DI definition. Since the definition itself is rather extensive and evolves over time it is rather tedious to in written form. The framework is based on Christensen's theory and depicts the niche market type. It works the same for the new market iteration. There are four phases in total, the third one depicting the point where disruption occurred. The DI is divided into four distinct phases. Each of these phases depicts a crucial point in time and together they tell the whole story.

The framework depicts a simple table with four quadrants and a pie chart to the right. Let's explain the rectangle first. On the X axis are depicted customers while on the Y axis products. The products represent what is available for sale on a market. The mainstream product which is incumbent's product in our case is in the higher row. Lower row depicts the new product which is on a disruptive path. The left column represents the mainstream customer who is satisfied with the mainstream product because it does not overshoot his performance expectations. Niche customer is located on the right column. This customer's expectations are highly exceeded by the mainstream product. Since there is no alternative he keeps buying the mainstream product in Phase 1 although he isn't receiving desired performance. This however changes in Phase 2 when a new product is introduced by another firm. This is a niche product with lower performance but it is just the amount the niche customer requires. He doesn't have to pay a premium for the mainstream product and switches to the new one. The mainstream customer is not interested in the new product. Therefore he ignores the new niche product keeps buying the mainstream one. In Phase 3 the niche product starts to meet mainstream customers performance demands. The market is disrupted and the mainstream customer is interesting in buying the niche product. This results in the incumbent company to lose market share. Market share is depicted on the right side of the framework. The fractions are for illustratory purposes only and aren't trying to depict how much market share was shifted. The message of the pie chart is to show the rising competition. Even though some revenue was lost with some of the customers switching to the new product in Phase 2, the effect is only increasing in Phase 3 as mainstream customers whose performance expectations weren't overshoot up to that point are more reluctant to switch products. Phase 4 only shows that the trend continues as the incumbent company losses more customers as time passes.

A complimentary graph depicts the performance supply and demand lines and the changes which occur in the four stages.

Visualization of the market DI definition

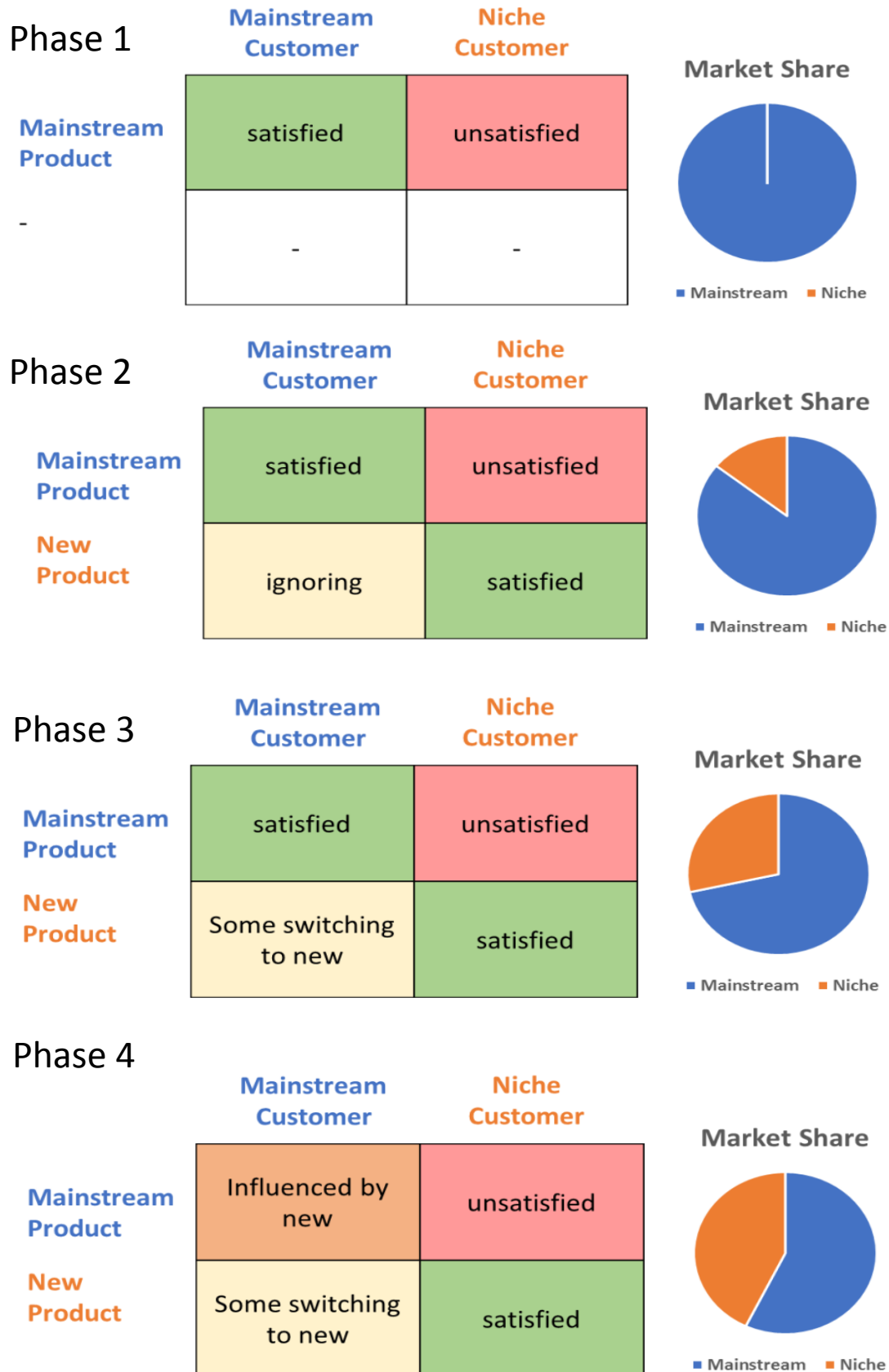


Figure 1: Visualisation of DI

Visualization of the market DI definition cont.

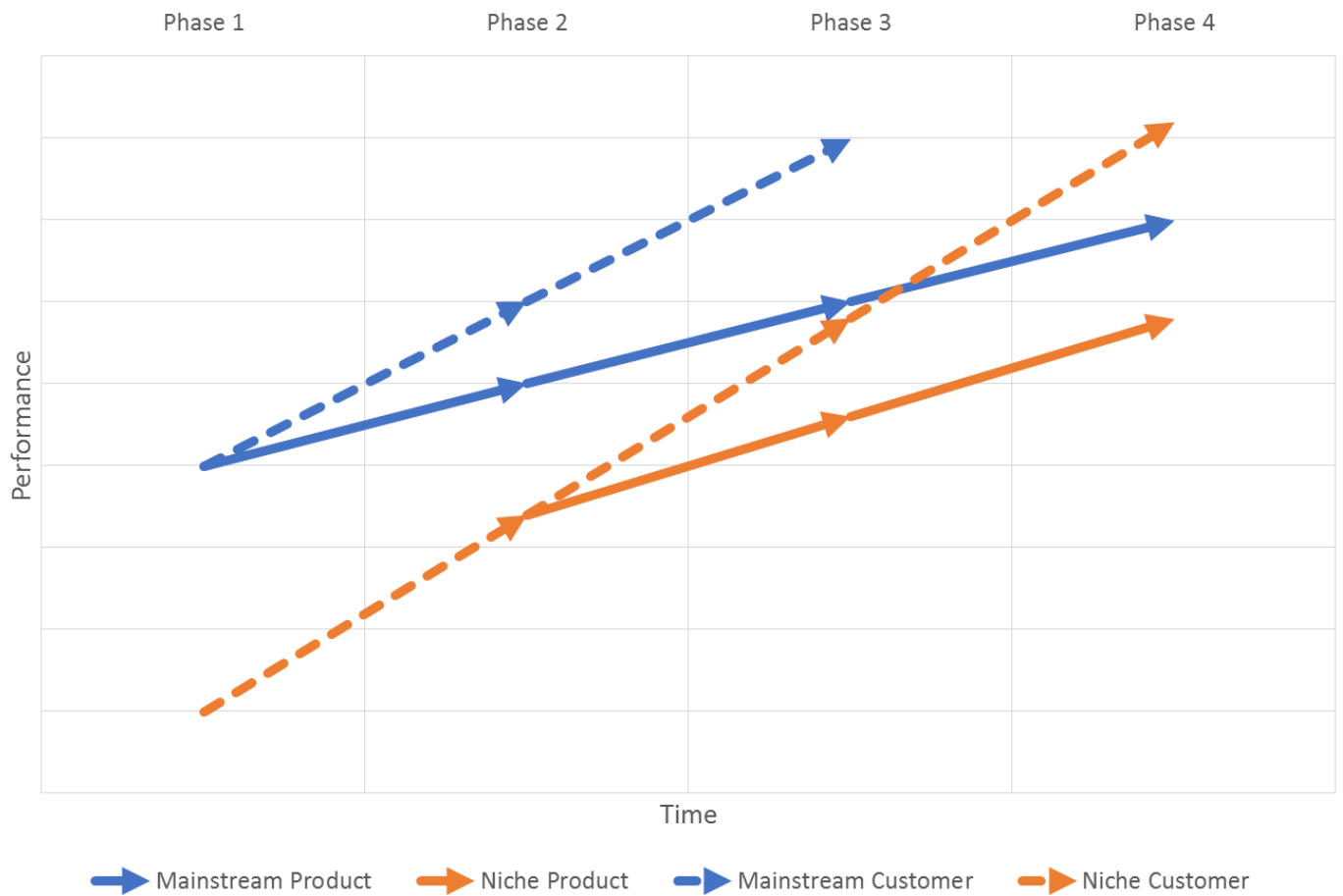


Figure 2: Performance demand and supply trajectories adopted from Christensen 1997

Disruptive innovation was observed to occur in two distinct market environments. First it was described by Christensen 1995 to take place in **low-end markets**. **These are** also referred to as niche, low cost or fringe markets. Niche markets offer products with pricing lower than average. Although still valid markets the majority of transactions and therefore profit lie in mainstream markets. As opposed to niche markets, mainstream markets are available for masses. Disruptive products were later identified to arise in completely **new markets**. This is also a viable way of introducing disruptive innovations. Similar to niche markets, the size of a new market is negligent in comparison to a mainstream market. Either way these products are viewed as inferior for the majority/mainstream customer and therefore aren't ready to be introduced to the mainstream market. Mainstream markets hold the most value. Over time these products develop to the point where they can compete for the mainstream customer with products from mainstream markets initially considered as inferior products by the mainstream customer. From a study of computer disc industry the first concept/formulation arose: 3 principal components of DI (p. 1048)

- I. Technological progress outperforms customer needs therefore products are needlessly advanced for lower end customer which creates an underserved market segment, an opportunity for new company entry
- II. The divide of sustaining and disruptive innovation is crucial
- III. Existing customers and current business models restrain firms which are locked in and no change happens

Anomalies of Christensen's original DI theory p 1049-50

- a) Flow of resources to DI does occur in some market leading firms, it was believed that no market leader invests in DI
- b) Market leader can utilize DI successfully
- c) DI can happen also in new markets not only low end/niche
- d) DI is a relative phenomenon to firm's business model
- e) An innovation can be put to market in either sustainable or disruptive way, the firm chooses

Markides (2006) argues that DI theory encompasses too many varied kinds of innovations. “different kinds of innovations have different competitive effects and produce different kinds of markets” pg 19.

Misunderstanding the DI theory

The concept of disruptive innovation did not take long to become accepted in business and management circles. After all, the theory evolved specifically for management and business leaders. It grew in acclaim even to the point of becoming an overused term. The popularity has also made its way outside of academia and business world. Unfortunately the concept has been reduced to a mere term. The word conjunction disruptive innovation is misused by laic population, oftentimes expressing a multitude of situations. Some of them completely miss the core points of Christensen's disruptive innovation. The following paragraphs discuss the main reasons which cause misinterpretation of DI. (Christensen, et al., 2015)

Unclear communication can contribute to misunderstandings. Christensen's work "The innovators dilemma: When new technology causes great firms to fall" can mislead readers from the true essence of DI. The title focuses on the market leader failure. The reader therefore implies importance to the act of failure. Company failure can mean a broad arrange of situations however it does not play a substantial role in DI theory. Failure of any kind can merely be a side effect, result of DI shaping markets. It never was described as a main driver of disruptive innovation. Bankruptcy is oftentimes associated as company failure. However it is not at all necessary for a market leader to file for bankruptcy for DI to take place. (Christensen, et al., 2015)

The second popular misunderstanding stems from the theory's evolution. The theory by Christensen has been around since 1995. Since more than two decades have passed, using the initial formulation today is not exactly ideal. The core concepts still hold however the theory has evolved tremendously. Many aspects have been updated while completely new knowledge and directions were added to the core ideas. (Christensen, et al., 2015)

Another misinterpretation arises from the usability of the theory. What Christensen and his coworkers laid down is a theory construct not a scenario set in stone. The theory of disruptive innovation yields different outcomes in different situations and industries when applied. As a matter of fact ongoing research keeps unveiling why some industries are more prone to DI than others. (Christensen, et al., 2015)

Disruption is a process when a company with fewer resources manages to compete with a market leader. While the market leader focuses on most profitable segments,

some customers are left unserved. That's where another firm steps in with a specifically tailored and niche product. As time passes and the new company moves up the market its products eventually compete with the market leaders. That is the point when market leader cannot ignore the competition.

The smaller firm's product has an advantage which made it successful in the lower market. Therefore the new product is better off. (Christensen, et al., 2015) Technological change is where disruptive knowledge has started in academia. When the theories of DI were introduced topics from Disruptive technology (DT) were adopted. Christensen published his breakthrough 2007 article the theory was fundamentally about technology. It was indeed Clayton Christensen who steered naming the theory to DI. Christensen realized it is not just technological change which can be disruptive. It was done so that all kind of innovations can be described as disruptive even when technology is not involved. Products and processes and most importantly business models are also part of the DI theory.

Practical Entrepreneurial Outcomes

At first the DI theory was scarce on useful practical leads for incumbent companies. It merely described how disruptive innovators take hold of markets. Still the original theory provided some useful tips. First of all it described the internal struggles of an incumbent firm. Marketing and finance departments are against highly innovative disruptive product development because it is much more resource and time consuming than the incremental development path. Market analysis values the current customer due to promising profit projections. On the other hand engineering will support new and potentially disruptive technologies arguing that market will eventually emerge (Bower & Christensen, 1995, p. 49).

Predicting DI

Predicting which new innovations will disrupt current market environments is crucial to withstand them. Such knowledge would allow companies to prepare for these changes. Managers could in theory seize the opportunity and allow their enterprises to thrive in the marketplace evolution. That is however the best potential scenario. DIs are capable of completely obliterating inflexible businesses. Preemptive measures could limit the potential negative impacts on a business. Due to these reasons academics as well as entrepreneurs seek viable ways of predicting DIs (Nagy, et al., 2016, p. 119).

As mentioned before the DI theory is complex and definitely isn't build for predicting DIs in practice. Nevertheless frameworks which try exactly that were introduced by multiple academics. These frameworks have however been less than ideal so far. Since the DI theory is market based there are numerous aspects to

One of the frameworks was proposed by Hang et al (2011) goes beyond the mere market aspects. It might look like a simple yes/no questionnaire but it takes a lot of work to actually answer these few questions.

Figure 1 Proposed assessment framework

	Yes	No
A. Market Positioning <ul style="list-style-type: none"> • Viable business in the low-end market • Viable business in a new, niche market • Are incumbents in the main-stream market willing to run away or ignore the initial disruptors? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
B. Technology <ul style="list-style-type: none"> • There exists a performance overshoot in the main-stream market • Adequate for a foothold in the low-end market • Adequate for a foothold in a new, niche market • Could be further improved in performance, price/performance, etc. • R&D needed to improve the disruptive technology is feasible, affordable, and well executed 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
C. Other Favourable Drivers <ul style="list-style-type: none"> • e.g. Favorable life-style changes • e.g. Helpful legislations 	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

Figure 3: Conceptual framework for ex ante DI prediction, adopted from Hang et al 2011

One of the most recent frameworks was proposed by Nagy et al (2016). It uses a new definition of innovation which encompasses functionality, technical standards and ownership

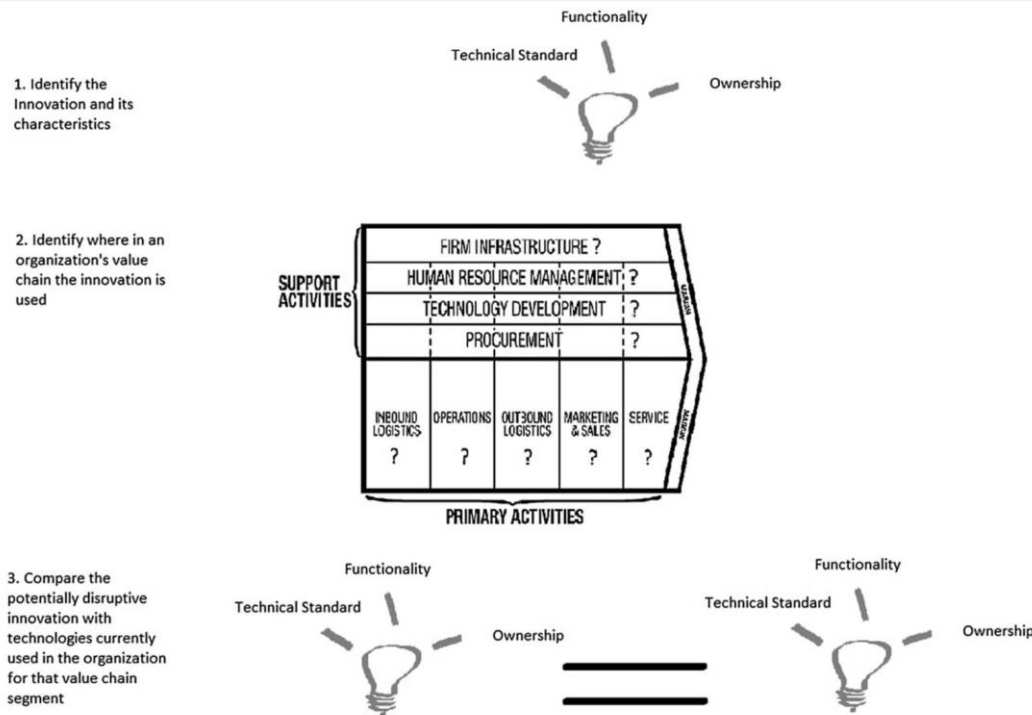


Fig. 1. Three steps to determine potential disruptive innovations.

Figure 4: Conceptual framework for ex ante DI prediction, adopted from Nagy et al 2016

Another framework was proposed by Klenner et al. (2013). This group of researchers decided to establish a construct called 'disruptive susceptibility'. This construct is a tool that helps to assess market readiness for DI. Their framework (depicted by Figure 3) shows how likely a market is to adopt a DI on a three digit scale from low potential to high (y axis). It also depicts whether the DI is expected to arrive in longer or shorter amount of time (x axis). The construct was based on a total of 14 propositions based on DI theory and previous ex ante approaches. (Klenner, et al., 2013, p. 915)

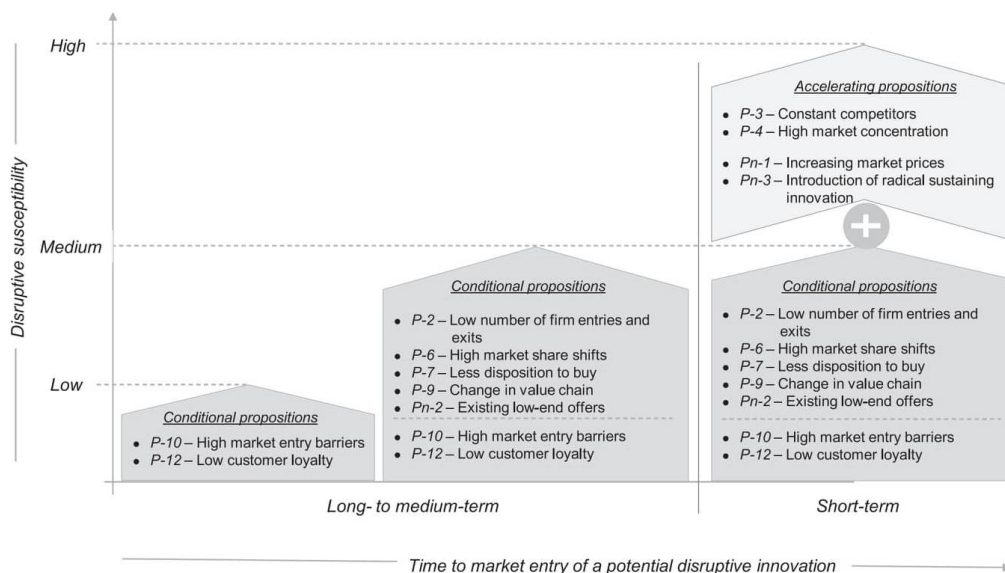


Figure 5: Conceptual framework for ex ante DI prediction, adopted from Klenner et al. 2013

This 'disruptive susceptibility' framework is a useful ex ante tool for accessing DI market readiness. The construct is highly adaptable so it can be easily updated as new DI theorems are uncovered. On the other hand it only includes market forces therefore it can be neglecting some aspects. Last but not least the framework needs to be tested on many more cases so it can gain validity. These will in return help to update the framework so it can yield the best predictions possible (Klenner, et al., 2013, pp. 925-926).

Incumbent Defense Strategies

What to do when your firm is caught up by a disruptive competitor can be a real entrepreneurial dilemma. Incumbent firms are still somewhat limited in their defense against disruptive firms. The old option proposed by Christensen back in 1997 stood the test of time. Multiple empirical studies confirmed that the incumbent firm can create an autonomous subsidiary which utilizes the disruption (Christensen, et al., 2003, p. 35). Since then it was proved that the incumbent can keep the new disruptive innovation in house with the use of ambidexterity. Improving current performance-improvement trajectories of their products, partnering with the disrupting firms and proactive repositioning in new niche markets were also revealed to be successful strategies. A theory focusing solely on the best practices in disruption defense could be substantially helpful in practice. There are already a number of useful strategies. More empirical research should focus at figuring out which situations are best suited for given defensive strategies. (Christensen, et al., 2018, p. 1062)

Promising further research areas

DI is a relatively young field of research. The initial theory was extended multiple times during existence. Most recent paper from Christensen and colleagues (2018, p.1052) notes, that research of anomalies was substantially useful for refining the theory over time. However there are still many areas where the theory seems weak. Most research is descriptive where researchers observe what occurs with companies, products and companies in markets. The theory still lacks answers when the question concerning when and why disruptions occur. The section on predicting DI demonstrated the insufficiencies in this area of research. In a previous section it was discussed that further research into defensive strategies and in which situations they prove to be advantageous has been one of the most sought DI theory extensions since its beginnings. Christensen and his coauthors (2018) identified three more areas with most promising future research in DI.

Hybrids are products which encompass elements of both sustaining and disruptive innovations. This seems like a wise strategy for technology and market transitions. The first example which comes to mind is a hybrid car. This product is a rarity since it has the traditional engine while it can also utilize electricity as a means of energy input. In the past hybrids were depicted as less than ideal solution enterprise transition efforts. A closer look however uncovers a different reality. Transitioning via hybrid can give firms extra time to assess the coming market changes (Christensen, et al., 2018, p. 1064). Research of hybrid offerings could lead to some before unexplored paths especially considering the combination of Schumpeterian and Kirznerian view. Figuring out in what situations hybrid strategy pays off and investigation of hybrid business models are also prominent research directions (Christensen, et al., 2018, p. 1061).

Conclusion

The bipolarity of Kirzner's entrepreneur who exploits information asymmetry and market imperfections and Schumpeter's disruptor and innovator was noticed in the each section of this thesis.

Proactive product development for future needs in other words Schumpeterian innovation is crucial in understanding DI. As a matter of fact Schumpeter was ahead of his time describing one of the most discussed topics in 21st century business. Schumpeter's disruptors and innovators are exactly the firms which perform DIs. On the other hand is in line with Kirznerian entrepreneur exploiting current needs reflect incumbent firms with products in mainstream market perfectly (Jong & Zoetermeer, 2010, p. 22).

The paper discussed both innovation and general as well as DI. It is interesting to see how vague and differentiated the general innovation definitions were. On the other hand DI is defined by its own theory.

This paper discussed the practical parts of DI theory. More and more frameworks which help identify where DIs may appear. It is also necessary for further research to look more closely into the options a firm has when defending against a disruptive competitor.

Last but not least the author wasn't satisfied with the current depiction of DI. Therefore a visualization framework was proposed which shows the fundamental changes of

Abbreviations

DI- disruptive innovation

ET- emerging technology

DT- disruptive technology

AAU- Aalborg University

R&D- Research and development

Table of Figures

Figure 1: Visualisation of DI.....	13
Figure 2: Performance demand and supply trajectories adopted from Christensen 1997.....	14
Figure 3: Conceptual framework for ex ante DI prediction, adopted from Hang et al 2011.....	20
Figure 4: Conceptual framework for ex ante DI prediction, adopted from Nagy et al 2016.....	20
Figure 5: Conceptual framework for ex ante DI prediction, adopted from Klenner et al. 2013.....	21

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