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A háború művészete

- Romboló innováció: kihívások és megoldások -

The Art of War

- Disruptive Innovation: Challenges and Answers -

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Introduction

Disruptive innovation can be most easily described through the analogy of a city under siege. Disruptive companies generally take advantage of the weak defenses of successful companies. Forcing the population onto the brink of starvation by cutting it off food and supplies was the usual tactic during the last few centuries. Not much has changed since then, disruptive incumbents force successful firms out of the market. Although the mechanisms through which this is achieved greatly differ, the end result of the process for disrupted firms is the loss of current consumers and the exhaustion of their financial resources.

The first part of our paper consists of a theoretical overview of the literature of innovation and in particular, of the disruptive kind of innovation. We discuss the basics of innovation theory, the special features of the phenomena of disruptive innovation and the dynamics of it that causes it to occur in cycles.

In the second part of our paper we provide two suggested models for the incumbent market player to tackle the phenomena of disruptive innovation: a reactive model of possible answers for an actual disruption and a preemptive design of a business model capable of withstanding disruptive shocks.

The first one is the case when the attack of disruptive innovation comes as a surprise. For this case we have laid down a decision framework where the given incumbent is given the options of mobilizing all its forces (make or buy), fleeing (blue ocean), surrendering (disrupting itself) and suicide (selling out). The other one is the case when there is no immediate threat at hand. In this second scenario we find our leaders in a peaceful position in an otherwise historically turbulent period. Our suggestion is that leaders should not let themselves be fooled, for peacetime (i.e.: relatively stable market conditions) is only a temporary state, and preparedness is of essence.

Our research question

Clayton M. Christensen mainly focuses on the destructive side of disruption; along the articles we have read about disruptive innovation (Christensen's and that of others following him) we found that they are overly occupied with describing how disruptive innovation works, while leaving the question of how to react to it up to corporate decision makers. This is why we have decided to try to create a basic decision-making architecture through which a reactive strategy can be chosen and a preemptive business model may be built. We think that disruption is in fact evitable or can be deferred; the main motivation behind the paper is to map the underlying mechanisms of the phenomena to prove so.

The primary added value of our paper are the two models designed in the second part of the paper, offering a two-dimension (reactive and pre-phase) framework for incumbent firms to cope with the phenomena of disruptive innovation.

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1. Clausewitz about War¹ - Theoretical Overview of Innovation

The notion of innovation is usually associated with positive assumptions about firm performance, competitiveness and the ability to give proper answers for the changes in the business environment. In short, innovators' core motivation is to add something new to their operations: in order to (a) become able to better satisfy consumer demand, (b) become more efficient and competitive. In the followings we are going to give a theoretical overview on the essence of innovation itself, ending up discussing the disruptive kind of it, which is in the main focus of our paper.

In doing so we are going to describe the innovation-based competitive advantage of market players, using the concept of the resource- and the knowledge-based approach to the firm theory. Also, in this chapter we are going to draw a distinction between two basic types of innovation: sustaining and disruptive innovation and elaborate on the core attributes of them.

1.1 From the resource-based to the knowledge-based approach of the firm

In the resource-based approach to the firm (Grant, 1991) the environment of the firm is simply too volatile to build the firm's strategy on it. Instead, firm strategy should be formed on the basis of sound knowledge about the resources and capabilities of the enterprise (Grant, 1991). Collis and Montgomery (1995) emphasize that not only its capital and other tangible assets, but also the organizational routine, culture or brand name can be interpreted as resources of the firm. Competitive advantage, according to Grant (1991), derives from the capabilities built up as the combination of the firm's resources. According to Peteraf (1993), one of the theoretical conditions underlying competitive advantage is the heterogeneity of resources, which implies that some are superior to others.

For the sake of our paper's focus topic, here we are elaborating on a special resource, which serves as the principle of innovation: knowledge. Knowledge is hard to define unequivocally, but a clear distinction can be made between tacit knowledge (which reflects knowing *how* to do things and is hard-to-transfer) and explicit knowledge (which

¹ Carl von Clausewitz (1780-1831) was a German-Prussian military theorist who is commonly considered as the father of modern military theory. His most notable work is titled 'On War'(Vom Kriege). (Aron, 1983)

reflects knowing *about* facts and is easier to communicate). Individuals possess specialized knowledge and in Grant's knowledge-based approach this fact calls for the existence of the firm. (Grant, 1996)

In our view, it is also knowledge that captures the essence of disruptive innovation (which we discuss in more details later in this chapter): knowledge and capabilities built upon that knowledge, enabling some to recognize opportunities to beat players believed to be superior on the market.

1.2 Innovation-based competitive advantage

The concept and notion of innovation is deeply embedded in the Schumpeterian approach to competitive advantage and the source of rents. Schumpeter (1950, in McGrath et al., 1996) suggests that the value of the asset endowments of the firm can be renewed only through innovation – that is, through the process of *creative destruction*. The process inevitably entails that the enterprise changes, causing its resource-set to change as well. By properly combining these newly evolved resources into capabilities, the firm is able to gain rents on the innovation. The combination, however, also determines what capabilities the company does *not* possess and what external factors it is *not* able to deal with. This immediately links us to the topic of the dynamics of innovation (from the point of view of the innovator and also, from that of the other players of the market). How can the innovator generate rent on the innovation and more importantly, how can other firms cope with the often restructured conditions of competition? This latter question gains special relevance in case of a special kind of innovation referred to as disruptive innovation, elaborated later on.

In another interpretation innovation can be viewed as the realization of a new idea (Popadiuk and Choo, 2006). This, again, links us to the knowledge-based approach: the root of innovation is the knowledge, which generates a new idea and innovation occurs when this idea is actually realized. Not all innovation turns out to be successful though - the success of innovation depends on several factors: such as the characteristics of the knowledge that serves as the core of the innovation, the ability of the firm to efficiently coordinate its resource-portfolio or the overall competence of the firm's human resources.

1.3 Typology of innovation

Though the notion of innovation is often linked to the final product itself, innovation can be realized in any part of the value chain and can take four basic forms: product innovation, process innovation, marketing innovation and organizational innovation (OECD, 2005). Depending on the industry-specific attributes and on the firm's specific resources and capabilities, the actual adequacy of one type or the superiority of one type to another is always a complex question to analyze and a difficult choice to make for the firm.

A 2012 study of the OECD differentiates three basic types of innovation regarding the underlying the organizational and technological mechanisms involved (Scarse et al., 2009; OECD, 2011 in OECD, 2012, p.3.):

- **Incremental** innovation: aims at modifying and upgrading already existing technologies and processes of the firm. The primarily aim is to raise efficiency of the resource- and energy use, and doing so without fundamentally changing the underlying core technologies.
- **Radical** innovation: involves a shift in the technological regime of a given economy. It is usually a complex process involving non-technological (but, e.g. infrastructural or social) changes as well, and mobilizing many diverse actors of the economy. Radical innovation does not only entail the development of radical, breakthrough technologies - also, it often drives to a reconfiguration of product-service systems. Such an example is to close the loop from resource input to waste output ("cradle to cradle") and to develop business models that reshape how consumers receive value on one hand and reduce material use on the other.
- **Disruptive** innovation: changes the conditions of competition by providing a totally different value from those offered by the mainstream market players. It is about a change in the mindset and the leading paradigm of the existing consumer market. It primarily features technological simplification, business model innovation and value network creation.

The first two types in the above categorization of innovation are jointly referred to as sustaining innovation. The following chapter in the theoretical framework of our paper deals with the concept of disruptive innovation. First, however, we are going to point to the essential differences lying between the two basic branches – sustaining innovation and disruptive innovation.

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2. Guerilla Warfare – The Concept of Disruptive Innovation

As the second major part of our paper deals with the dilemma of incumbent, market-leader firms being the actual victims or the potential threatened bodies of a disruption process, our focus here is going to be particularly on those attributes of the phenomena that are relevant for the incumbent firm.

2.1 Sustaining technologies versus disruptive technologies

Putting it brief, sustaining innovation affects existing markets by evolving them. It is the form of innovative behavior that is typical among current leading players in the competition in between each other on an existing market. In accordance with the above-described categorization of the OECD, Christensen (1997) also differentiated two types of these by the nature of continuity: *evolutionary* and *radical*. Evolutionary innovation is defined as the natural improvement along the path expected by costumers, while the radical form in this sense is a discontinuous, yet not at all game changing upgrade. The common between these two is the low impact they exert onto the existing market and consumers present. Note: although disruptive innovations are indeed radical by nature, it is not true vice versa – there are many radical innovations are not disruptive (Yu – Hang, 2010), as they do not change the leading paradigm of consumer markets.

In case of a sustaining innovation, the essence of renewal is limited to technologies improving product performance, which is not at all necessary in case of a disruptive

innovation. This attribute gains special relevance from the point of view of the incumbent. While large, market-leading companies are usually familiar with such technologies that involve improving a product already established in the market, they face difficulties dealing with disruptive technologies – they stick to the paradigm simply for the sake of increasing efficiency and predictability (that is, in order to decrease uncertainty).

2.2 Definition of disruptive innovation

The notion of disruptive innovation was first popularized by Clayton M. Christensen, with the 1997 publication of his influential book *‘The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail’*. The idea was given broad attention by academia and had a large impact on management practice too. Since then the academic literature has given many diverse approaches to the discussion of the phenomena, yet ending up in a status-quo where no ultimate definition nor the limits of theory can be given exactly.

The theory of disruption deals with a very specific scenario, a sequence of events after which successful, well-managed companies find themselves backed into a corner (Bower - Christensen, 1995). Products based on disruptive technologies are beating their products - because they are cheaper, simpler, smaller or often, more convenient to use. Disruption, according to Wessel (2013) is, indeed, the answer for the following question:

**Why do companies possessing the best resources, most well-trained staff,
access to distribution channels and financial funds fail time and time again
when they are challenged by small start-ups?**

The underlying reason for this is primarily the short-term thinking mindset of the industry-leader company.² This aspect is going to be detailed later in subchapter ‘Why do successful companies fail?’. However, to deeper understand the phenomena we first need to possess a better understanding of what it exactly implies. The following paragraphs serve as a descriptive analysis of the framework first laid down by Christensen in 1997

² Note: While the question of whether or not market leaders can fairly identify disruption is a relevant one, it is not the primary focus of this paper, i.e. it is presumed to be (see: subchapter ‘Anticipating disruptive innovation’).

and of the underlying mechanisms compelling otherwise strongly competitive firms to fail so miserably.

As to the original formulation, the author dealt primarily with technological innovations. However, later he widened the application of the notion to products and business models as well: for instance, in a later work of Christensen and Raynor (2003, in Markides, 2006) the authors also list certain discounts department stores; low-price, point-to-point airlines; even online businesses such as bookselling education or brokerage as disruptive innovations. Yu and Hang (2010) add that according to the original theoretical framework, a technology is defined as disruptive when it creates a different market by providing a totally different value from those provided by mainstream technologies. Initially, this technology is inferior to mainstream ones: Christensen (1997, p. 11.) describes disruptive technologies as “innovations that result in worse product performance, at least in the near term”.

In his recent article Wessel (2013) suggests that the notion of disruptive innovation is often mistakenly applied for cases which are, indeed, not disruptive at all. He points out that the often referred high-end disruption actually does not exist – there is no disruptive innovation where the captured innovative offering is superior to existing products in technology, rather it involves such features that enable it to become an offering of higher value.

2.3 Low-end disruption and new market disruption

In Christensen’s theoretic framework an innovation can be defined as disruptive when it creates a different market by providing a totally different value proposition. This form of innovation is usually practiced by start-ups and is latter defined in his work as *low-end disruption* (Christensen, 2003). The disruptive process entails that consumers will eventually leave the former market and wander to the new one once there is a solution present that meets their needs. As developing first movers and champions in adoption of the new technology saturate all segments of the new market, the former market - where obsolete technology is the standard - shrinks and eventually vanishes (this happens in theory; in practice there have been very few examples where former markets got totally wiped out).

In their book “Blue Ocean Strategy”, authors Kim and Mauborgne (2005) articulate the topic of disruption by new market creation. It should be noted that this is the alternative to low-end disruption, not in any way a part of it (hereinafter referred to as *new-market disruption*).

The concept of blue ocean strategy deals with the issue of fierce competition in saturated markets. The idea behind is that companies should leave the “red ocean” and strive towards a “blue ocean”, the former in this case being a market teeming with competitors and characterized by low profit margins while the latter is new market to be established. The foundation behind new market creation is a segment presently neglected or unrecognized by current players. Another necessary criterion is the appropriate combination of resources by the respective company so as to adequately serve the needs of consumers previously not satisfied.

In the final chapter of the theoretical part we discuss the virtual mechanisms of disruptive innovation from the point of view of the **incumbent** firm. First we are going to deal with the theory of anticipating disruption; after the main motives in the failure of large market-leaders, in the success of newcomer innovators and the cornerstones of the disruption cycle are going to be covered.

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3. Knowing the Enemy – The Dynamics of Disruption

In this chapter we focus on the underlying mechanisms that tend to cause market leaders to fail and disruptive innovator enterprises to succeed. Also, as we identify disruptive innovation to be not only a one-occasion miracle but to happen in cycles – thus also its dynamism is going to be elaborated. By the end of the theoretical part of our paper we discuss the framework within which we consider the disruptive innovation to be possible to anticipate.

3.1 Anticipating disruptive innovation

During our research we have found ourselves facing the question of whether or not companies can identify disruptive innovation? Obviously this is point zero when trying to give advice on how this issue should be dealt with. We believe that it is possible to identify such phenomena. Along the next paragraphs we will use Paap and Katz's 2004 article, titled "Anticipating Disruptive Innovation" as a basic framework to identify disruptive innovation.

They described three scenarios in which disruption can occur, these are not to be misinterpreted as different forms of disruption, for they are indicators that should be constantly monitored in order to recognize disruptive innovation. They built their framework on monitoring how change in performance induces impact (performance in this case is influenced by investment, which has a decreasing marginal utility in terms of performance enhancement), this is referred to as leverage. As a result of this they've found there to the following three scenarios during which disruption may occur:

- a) Old technology matures in a way that it can not meet the dominant driver³ of the business .
- b) The perceived dominant driver matures, the marginal utility decreases and steadily heads toward 0.
- c) A new dominant driver emerges as the result of environmental changes without the introduction of new technology.

Our understanding is that the key to recognizing disruption first of all lies in the constant reevaluation of drivers' leverage. Secondly technological landscape within and outside of the industry should be monitored constantly, not by the solution they offer, but by the problems they promise to solve, the needs they seem to satisfy. Lastly it is of key importance to weigh in that whether or not disruption occurs is not a question of technology involved, but rather the activity/inactivity of dominant incumbents.

In sum, we stand far from stating that disruption is an easy-to-identify phenomena, but we do presume that dominant competitors in a certain market are in possession of sufficient knowledge about their business, their consumers, the dominant value drivers and the leverage attributable to these to be able to identify not only commenced

³ Dominant driver: performance characteristic with the greatest leverage (Paap & Katz, 2004)

disruption, but upcoming disruptions as well. With this we suggest that further on along our paper we shall treat the identification of disruption as a skill all leading incumbents retain.

In the next part of our paper we propose an overall framework for the incumbent firm to deal with the particular phenomena of disruptive innovation. First we establish a reactive model of potential actions to be taken by the incumbent in a post-disruption scenario, after that we offer a proactive solution aimed to be taken into account in case disruption can be identified and also avoided/taken into the hands of the incumbent and lastly we attempt to provide a long-term model for designing a business model that can help preventing the unwanted failure – before it could be anticipated.

3.2 The rise and fall of disruptive innovators

Disruptive innovators are typically rapidly growing start-ups that produce products with similar characteristics as the incumbents they are trying to overthrow, but more efficiently than their established counterparts. With these they approach low-yield, mass segments of a certain market. Since they too wish to be able to serve high-margin consumers, there is an ever-present red ocean environment in these segments (Kim-Mauborgne, 2005). The exact moment of disruption's commencement occurs is when a low-end serving competitor is in possession of sufficient financial resources and knowledge to support its primary innovation to leapfrog into a segment promising higher earnings and a less environment. The process is finished when the highest reachable segment with the most complex consumer demand is reached.

This is the moment where market leaders tend to fail inevitably. As push from below, in the form of a firm (or a group of firms) constantly increasing the value provided by its products/services forces them upwards, their respective consumer base keeps shrinking as they keep getting closer to price ceiling present. From here on it is only a matter of financial resources as to how long a former leader will be able to stay afloat.

During our research we have encountered a fairly wide variety of articles about the success and failure of disruptors and the underlying causes behind each. There does not seem to be an agreement on what these are and neither do we think that entrepreneurship

can or should be expressed in an algorithmic form. So we lay down a framework of our own including the factors we considered to be relevant in this aspect.

In our opinion there are three main elements that have a major influence on whether or not a disruptor succeeds: (a) the idea and the business model build upon it, (b) the capital a certain company is in possession of or can call on and on (c) how skilled the management is. Naturally there are other factors, some factual (like supplier terms and employment agreements) and some soft (like timing of product launch or the marketing strategy thought up) that not only may, but will obviously influence the growth of a company. We handle the three factors mentioned *ceteris paribus* and assume the others to be supportive rather than hindering development.

(a) First and foremost we consider the basic idea and the business model this idea is built upon to be the most important factors. There are three specific elements to this: technological simplification, business model innovation and value network creation (Christensen, 2011).

- *Technological simplification* entails that the product/service offered by the company is produced through a simpler/quicker process or that it provides consumers/buyers with a lot simpler/cheaper solution.
- By *business model innovation* we understand that the said disruptor has a customer value proposition that is also supported by its market as well as its technological and operations management process and in the end leads to a profit formula that is not only sustainable but scalable.
- The creation of *new value networks* is necessary because a trying to enter an existing one with a new business model will only lead to forced adaptation and inevitably co-optation (Christensen, 1997).

(b) Secondly, a growing corporation or a totally new business venture necessitates an enormous amount of capital in the form of cash or cash equivalents to support its rapid expansion. This can come from various sources initially: owners, loans, venture capital and other kinds of investors. The key point is that all investors have yield expectations that need to be met. The main objective here is to have clear goals ready in the form of milestones and to pursue a fitting liquidity strategy. The problem with capital

is that before the business idea is proven to have a *raison d'être*⁴ it is extremely hard to cope with liquidity problems once they arise (Skok, s.a.).

(c) Finally, management skills are quintessential at adjusting the above mentioned to the current state of growth of the company - since neither operations management, keeping up market orientation or financial management are static or can be planned for in advance. Execution, evaluation and reaction to environmental changes are dynamic activities the executive staff has to be able to control so that the organization can grow organically without significant performance bumps. The dimension of management skills is probably the most difficult one to measure up.

3.3 Why do successful companies fail?

The great question regarding the topic of disruptive innovation focuses on why successful incumbents tend to fail when competing with disrupting competitors. Market leaders consistently follow the path of sustained innovation. As stated earlier above, their main motivation in doing so is based on short-term financial reasoning (they seek to minimize the risk of uncertainty) and also, they do not recognize disruption on time. As earlier discussed, we consider incumbents to be able to identify disruptive innovation by building up the necessary capabilities to do so. The underlying mechanisms are discussed in more details in subchapter 'Anticipating disruptive innovation'. Along the following pages we will be basing our assumptions and statements on a foundation where this factor is no longer a variable but is given.

One of these reasons behind the failure is the 'low-cost/high-yield' paradigm ever-present regarding short-term investments; implementing incremental or low-impact radical improvements quite simply necessitates a lower cost commitment than the pursuance of trying to stop, prevent or forgo disruptors. All along these small betterments allow these incumbents to keep up relatively high profit margins in the respective segments they serve. This is of utmost importance nowadays (as Christensen also enhances) as the ownership structure in large companies has shifted toward a form where the majority of

⁴ Right to exist

owners which to exit the company within a year with the highest achievable yields in their pockets. This is particularly true in the case of publicly listed companies. Christensen (2005) suggests another key aspect publicly listed corporations take into account when it comes for innovation. These companies are well aware of the potential signaling effect of a likely-to-fail innovation on capital markets. They seek not to engage in disruptive kinds of innovation as it features large inherent risk and there is a great chance to fail. Such a failed in-house innovation would have a painful negative effect on the reputation of the company and thus, on its price shares as well. Thus, if in any ways, these companies engage in such innovation by doing it outsourced - for instance, in a spin-off established especially for the sake of avoiding the above scenario.

The other main factor is overall inefficiency in the pursuit of retaining a high market share in each segment. Not only do the lower segments dissolve the focus of management, but they lower the overall profitability of the respective firm. Because lower profit margins are attainable by serving customers in the low-end segments, the inclusion of these in the portfolio of products/services offered lowers the average profit margin of the whole portfolio. Keeping profitability ratios high as possible is of key importance for publicly owned companies, since these serve as the primary decision influencing variables for potential investors. The above phenomena does not entail that these companies are poorly managed, rather on the contrary: in most cases these companies come to be in the leading positions in their respective markets exactly because of their skilled management.

Yet they tend to fall victims of disruptive innovation. As pointed out in the previous chapter of our paper, low-end disruption is always a kind that starts from the bottom upwards, in low-yield segments where after a certain point (like an IPO) they have less and less financial motives to support their presence. Since successful sustaining innovator firms aim for the highest margins attainable and typically do not innovate to serve low-end consumers, their products/services (if any) offered to these become uncompetitive, outdated and eventually obsolete.

This is the point when disruptive companies come into the picture, those who are ready to target the low-end segments, possessing great, paradigm-changing ideas and the necessary capabilities to turn the idea into products or services. In the followings the

major success factors and attributes enabling these – often-start-up – Davids to beat the Goliath are going to be discussed.

3.4 The disruptive cycle

In our interpretation of Christensen's work (1997) disruption is not a one-time occurrence, but a repetitive cycle of market evolution. It is a process during which a new market is created that uses a new value network⁵ and as disruptive companies move upmarket, the disruptive technology that gave them leverage in the first place improves and trickles up into segments demanding high added value and integrated solutions. But there is a point at which the disruptive market becomes saturated as well and an equilibrium of flux sets in. This means that the innovation driving companies and consumers there becomes commoditized and sustained innovation becomes the center of attention for competing forces.

In short, once disruptive entrants have created their own market they turn to sustaining innovation because pressure on them to create new value suddenly disappears. High profitability is kept up by incremental or radical, but low impact developments and this balance is kept up until another disruptor shakes up the market.

There are three key industry-specific determinants to be taken into account: as we have already mentioned, it is important to realize that (a) only a very small proportion of start-ups mature into disruptors; (b) the length and frequency of disruptive cycles differs between industries; and lastly, (c) disruptive technologies rarely wipe out whole markets or quasi-obsolete technologies but rather particular companies.

The time it takes for a disruptor to become a dominant player differs depending on the industry. The reason for this is that industries are dissimilar when it comes to how intense the competition to innovate is within them. How easily a technology is copied and how capital-intensive the implementation of the particular development is and how high the perceived switching costs related to it are for consumers/buyers.

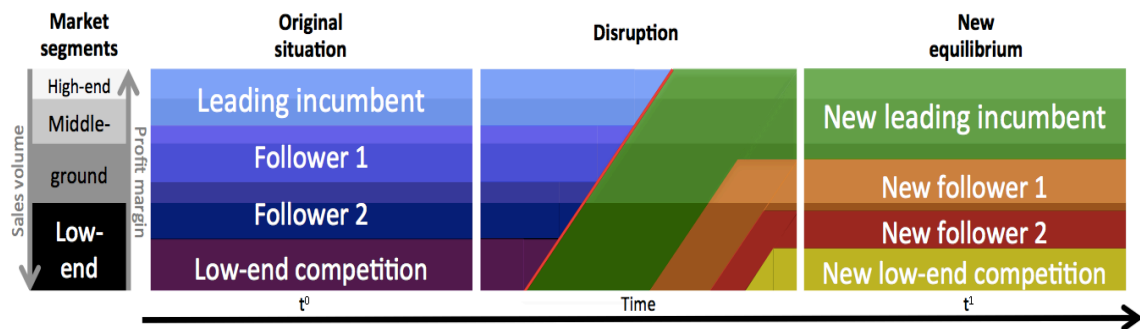
For example: To introduce a new, patented drug it takes years to actually develop the drug followed by more years of clinical trials before sales can begin and even then patients may be reluctant to even try it. On the other hand, if we look at the introduction of new mobile

⁵ Value network: supporters of an industry-wide common business model: upstream providers, downstream channels and ancillary providers (Christensen, 1997).

phones, we can see that it is a matter of a few months to start distributing (including the R&D phase).

Disrupted markets very rarely vanish totally. Many survive as niche markets (for instance technologically inferior one-time use cameras) or are kept alive by governments (even though over-the-air television broadcasting can be considered outdated technology, some systems are still kept up by states for national security reasons).

The disruptive cycle



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4. Hands on War – Models for Tackling Disruptive Innovation

In this chapter we offer two frameworks for the incumbent firm: one for the scenario when the disruptive innovator has already appeared on the scene and the other for those situations where it is presumed to occur sooner or later. The first model can be captured in a two-dimension matrix, while the second offers an approach to design a business model that helps better dealing with the unknown.

4.1 Operation disruption – Surviving the disruption

During this subchapter we lay down a decision-making guideline for the scenario when disruption is well on its way and clearly recognized by the disrupted company. Also, it should be noted that the reactive strategies along the rest of this subchapter should only be taken into consideration when these two criteria apply to the observed firms: they are not start-ups, but established competitors and their fundamental decision drivers so far have been short-term financial gains.

4.1.1 Assessment of forces - Classification criteria

Taking into consideration the theoretic foundations laid down previously we have been able to outline two crucial stock characteristics by which firms can be differentiated among one another: the financial and the knowledge resources they are in possession of.

We have outlined these two because these are the two key elements of growth in the case of disruptive competitors, thus the two key categories they have to overcome in to stay afloat, if they are already on a clear path of growth. Naturally management is also of key importance, but we excluded it for two reasons from the solution evaluation of this scenario: mainly because it is an asset that can only be valued by performance, which is a flow variable in this case, and fairly little can be said on the basis of prior information.

Under financial resources we have considered current savings and/or other revenue sources through which possible momentary or even long-term losses generated on the disrupted market can be balanced out and necessary capital can be raised to finance future investments.

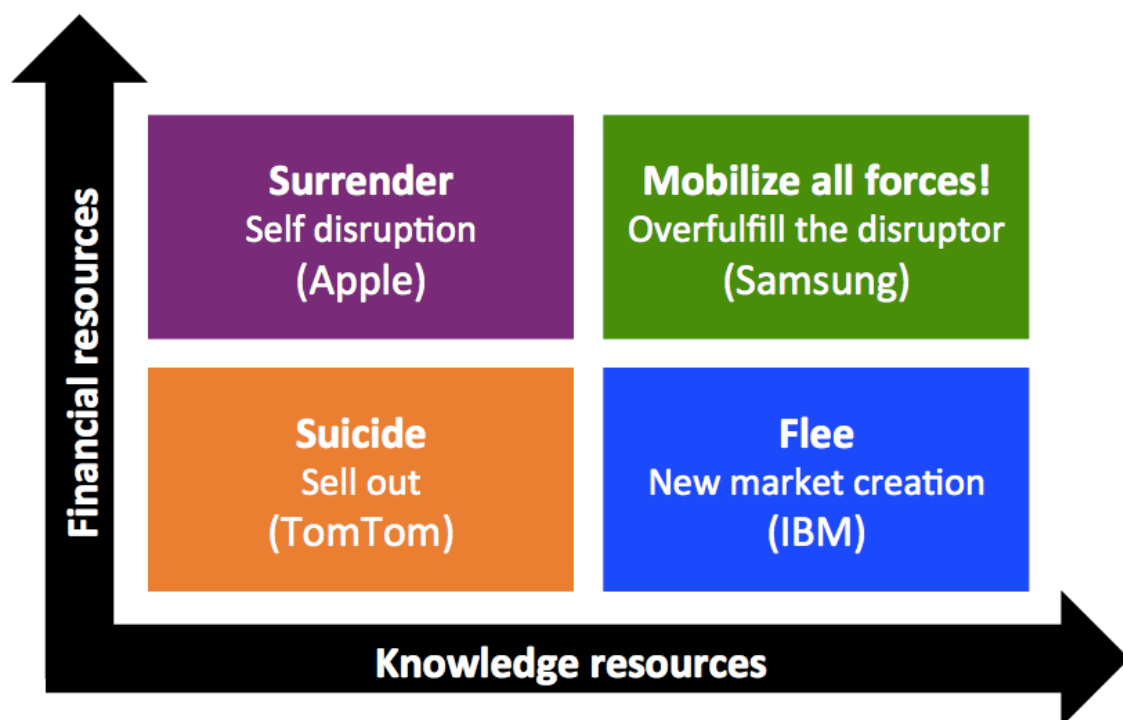
By knowledge resources we had in mind the R&D department (number of employees, proportion of PhD graduates, spending accrued for R&D purposes in the past) a certain

firm resides over and the sum of registered patents and hardly imitable technologies (mostly in the form of acquired firms). While the former may be a key asset in adopting the disruptive technology as well as developing supplementary technologies for sustained innovation, the latter may add unique value to the product offered later on.

Again, we would like to emphasize, that as we elaborated our solution paths we took it for granted that disruptive innovation is identifiable. In reality it is not at all that simple to correctly assess the situation, but taking into account such a variable would have severely distorted our framework.

4.1.2 Defensive tactics -Strategic options

Along the classification criteria there are three feasible paths to follow in order to deal with disruptive innovators: overfulfilling the disruptor, new market development and self disruption (for a graphical interpretation see figure below). Along the next pages we will explain how and why we consider certain reactive strategies to be fit for companies with or without specific resources. We chose to use examples from the consumer electronics industry, because even though the examples are from different time periods they can be somewhat comparable in the sense that the disruptive cycles occur within more or less the same frequency, so there is all are facing about the same amount of time to react.



a) 'Mobilize all forces!' - Overfulfill the disruptor

Overfulfilling the disruptor is recommended for those companies that have abundant financial and knowledge resources as well. This is the indicated course line for market leaders because it is the option with the lowest cost commitment involved combined with a still alluringly high profit margin. By low cost commitment we are referring to a relatively low R&D expenditure growth and the possible expansion of production facilities/buy outs that will drain proportionately lower amounts from profits than in the case of smaller companies. Naturally as the company starts serving less profitable segments the overall profitability of the company will also shrink on the income side as well. This move is necessary to slow down and in an optimal case stop and overhaul disruptors by reserving the market so these cannot gain enough capital to continue moving upmarket.

Example (Samsung Electronics):

In 2007 Samsung's electronics division mainly focused on producing LCD televisions and semiconductors, but it was also present in the mobile phone industry as well. Being present with a 4% market share (considered to Nokia's 41%) does not definitely make it a market leader (but keep in mind, market share in this case is expressed in units shipped, not sales), but its products, like the D900 or the E250 were far from low-end devices.

With the appearance of Apple's iPhone it was clear that the classic candy bar phone's time was up. As the touchscreen smartphone revolution swept the mobile phone market Nokia shuttered because of losing most of its customers, but Samsung surprisingly survived and thrived in this new market environment (Cowley, 2013).

What happened was that Samsung Electronics was already in possession of the necessary financial and knowledge (not to mention, the production resources, since it was the main supplier of Apple) resources to quickly adapt to the paradigm shift at hand (Farhoomand, 2009). During the next few years by revising its innovation strategy by exploration of outside knowledge sources through a series of venture capital investments in innovative start-ups (Mawson, 2011) it managed to take up competition with the original disruptor and eventually become the biggest smartphone producer by 2013 with a market share twice the size of Apple (Cowley, 2013).

b) 'Flee!' - Blue ocean strategy implementation

Companies with copious knowledge, but scarce capital and/or indefensible sources of revenue are advised to find a blue ocean of their own, i.e. create a new market. Disruptive cycles are capital-intensive periods of market evolution (production expansion, restructuring and buy-outs are generally involved) and pursuing a solely knowledge based strategic path involves a high risk. This high risk entails the possibility of inefficiencies forming in two aspects of everyday operations (which if combined can have catastrophic consequences): increased investments raise the overhead per product and loss of market decreases per product revenues. In the case of companies with low stock and decreasing flow of financial resources, inefficiencies will lead to a slow (or rather a quick) hemorrhage of cash without sufficient replenishment.

Example (IBM):

In the early '90s IBM was still mainly a mainframe producer, but as mini computers emerged the company saw that sales plummeted and the need for their integrated solutions were of no need to anybody. The mainframe business, then the core of IBM's value drivers was soon to be a thing of the past.

The company soon changed profile, by the end 1993 with thanks the intervention of Louis Gerstner the company's main business was helping out its former clients and new ones figuring out personalized, integrated solutions for them to be able to cope with the lag the diversity of technologies used had brought forth. Basically IBM became an IT consultancy, as we would refer to it nowadays. (Denning, 2011)

We can not neglect Gerstner's role in rescuing the company, but we also have to take into account that this was the case when a company found themselves in a position where they had an abundance of knowledge resources and ever shirking cash inflows from ever fewer sources. They also took the same path we are suggesting, namely the pursuit of 'blue ocean' (Kim-Mauborgne, 2005).

c) 'Surrender.' - Purposeful cannibalization

Purposeful cannibalization is a last resort option only suitable for companies with few knowledge resources, but which still has (thanks to its current market position) to amass sufficient capital to restart from the low-end. These are typically those companies, which came into a leading market position through disruption and invested very little into

R&D. Purposeful cannibalization in this case involves focusing on adopting low-end technology and penetrating the new market from below rather than on focusing on improving their former disruptive technology on the high end, since that will become obsolete. This is thanks to very little supplementary technology involved in reinforcing the fundamental innovation. Their current high-end products are bound to become novelty at best as new disruptors reach the high-end and lure consumers over to the new market with cheaper and/or more efficient products. Restarting from the low-end is advised; since these companies will have a capital (and possibly a production) advantage compared to small enterprises and will have the chance to initiate buy-outs. I would like to clarify that this but a pure survival tactic, rather than a growth strategy.

Example (Apple):

As earlier mentioned Apple disrupted the mobile phone market in 2007 by introducing the iPhone and temporarily becoming the leading incumbent in the market. It also held this up for years, but its growth rate has declined along the last few years with the appearance of open source operational systems like Google Android and Windows 8. The key disruptive innovation's leverage does not only stem from offering producers like Samsung to create their ecosystems and apps for these devices, but that these systems can be installed on cheap devices giving the low-end consumers the benefits Apple has been denying them. (Kotter, 2013)

Recently rumors have sprung up, that Apple plans to do the same by introducing a new line of iPhone models with weaker technical performance, but at cost consumers in low-end segments may also be tempted to purchase it (Huberty, 2013). Though rumors or market expert predictions can and should be handled with precaution, at Apple has shown a pattern when it comes to controlled leaks, these have consistently been the used as hype building marketing tools policy-wise along the last few years (Brian, 2011).

d) 'Suicide.' - Sell out

In this structure there is no proactive solution to be recommended for companies with both low levels of financial and knowledge resources. Of course, our presumption that disruption is clearly identifiable by all players is not a totally realistic one. And in the case, that a short-term trend is falsely identified as disruption of the market by other competitors the best choice of action is continuing business as usual. But in this

framework, where disruptive innovation is a well projectable, inevitable occurrence the best-case scenario is selling out and extract as much capital as possible.

Example (TomTom):

With the emergence of smartphones the market of stand-alone navigation products has been disrupted. Since these are not only offered freely, but are more frequently developed, are built upon stable and ever improving platforms and are installed onto devices capable of fulfilling the tasks of these gadgets and much more there not much leverage left in improving its products for a company specializing in this field, like TomTom. (Downs-Nunes, 2013).

In our opinion, a company with a business model built upon solely one, obsolete demand driver does not stand a chance in a competitive environment. There is some space left in producing for a niche market, but we believe that possible earnings from the sales of current assets has higher present value than continuing in an inevitably shrinking market.

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4.2 Cold War scenario – Designing a lasting business model

Finally we provide a framework that does not aim to give answer for the situation disruption incumbents face when disruptive innovator is already on stage – rather it is about setting up a business model for market-leading firm that is able to take the challenge posed by changing market conditions.

Although the nature of change cannot be predicted, a properly designed path of pre-actions and reactions to change can help prevent the case of disruptors having the possibility of getting over the incumbent, causing the latter to fail instantly. In our suggestion we assume that the incumbent company either possesses (but maybe not yet aware of) the necessary organizational and financial capabilities to show adequate attitude towards this change or is able (and also willing) to acquire those capabilities.

Osterwalder (2010) defines the essence of business models by describing the rationale of how organizations create, deliver and capture value. In this approach there are nine interconnected dimensions of business models that can be differentiated, namely that of: consumer segments to attain, value propositions to offer, channels to deliver through, customer relationships to maintain, revenue streams to generate, key resources to possess, key activities to perform, key partnerships to engage in, and finally the cost structure resulted from the other dimensions.

There are some seem-to-be-obvious, intuitive ideas to keep in mind for cases when the incumbent firm can already see a disruptive scenario ahead. In such cases a rational incumbent would seek to identify the attributes (strengths and weaknesses) of the disruptors business model; to assess their own relative advantages; and finally, to map the conditions under which they can protect these advantages to be taken away or copied by disruptors. Also, if the disruptor can be identified, the market conditions that serve as obstacles ahead of it (the barrier of the momentum, of the technological-implementation, of the ecosystem, of new technologies and of the business model) can be more or less tapped and paid special attention to by the incumbent. (Christensen – Wessel, 2012)

What happens in the case when disruption cannot be seen lurking on the horizon? Still, the possibility is ever present, since disruption is cyclical (as we have already described) and not only a one-time occurrence. In these cases counting with the potential

disadvantages of disruptive innovation and taking advantage of them is not possible – as the disruptor itself does not exist in a noticeable form.

In such cases the right way to think about the possibility would be to be prepared for the *need* for a change that can be posed by external factors any time. It is likely to require a change in the leading paradigm, a change in the core business logic – and most importantly, it requires a change in the way the incumbents tend to think about change. This logic needs to be embedded into all nine dimensions of Osterwalder's above-illustrated frame of business model. It has to be built in so that any change in one dimension results in proper reactive mechanisms in the others.

The basic idea underlying our logic is that the model needs to be able to point to the point of equilibrium between the exploitation of the resources it already possess and the exploration of new opportunities. Also, it has to be dynamic - that is, it needs to be able to reach this equilibrium time and time again, as the sets of the competition evolve. The business model needs to involve a directed movement of the business entity (the incumbent) across its own knowledge funnel (Martin, 2009). May it be too abstract; it only suggests that the company should be *willing* to deal with questions of 'what could happen' instead of only focusing on 'what is actually happening'. As Martin puts it, it should be based on making a "logical leap of the mind" and an "inference to the best explanation" - these can help the company to hone and refine within the actual knowledge stage and generate the leap from one knowledge stage to another as circumstances of business change.

The core of our proposed framework to this consists of three pillars.

1. The incumbent has to automatically give up turning to reliable methods instead of valid and appropriate ones. The concept of the business model should reflect this in being able to be redesigned at any time and at any point. The incumbent may engage in open innovation – in a paradigm to look for ideas lying beyond its formal boundaries. This helps see disruptive innovators coming right before they appear on the horizon.

2. Incumbents shall slow down disruptive innovation already before it takes off. It involves making it harder for potential disruptors (that can be anyone) to turn the idea into innovation. Keeping a very close eye on the newcomers is of crucial importance in this

aspect – in this case the incumbent can either acquire those before they eventually could start the process on their own or to come up with a product of its own and win the war which has not even started yet.

3. Respecting though all of the above, the incumbent should be prepared for the scenario, where by chance something happens what it is not prepared for despite all efforts. In such a case being close to the all-time exit option is the last gun at hand. When competing with undisciplined rivals, the incumbent should keep in mind new kinds of diversification. The business model should be designed so as to be able to switch to those new platforms where it is viable and can be extended to. (Downs-Nunes, 2013)

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Conclusion

As we stated at the beginning of our paper, our objective was to try to create a decision-making framework through which respective market leaders can choose a reactive strategy or a preemptive development model to disruption. As we did that this section serves as more of a summary than a collection of grand conclusive remarks, those have already been made along the paper.

In the first part we have summed up the basics of the disruptive innovation theory by defining disruption, the difference between sustaining and disruptive innovation and the two forms of disruptive innovation: low-end and new market disruption. And lastly we have also added to the context the notion of disruptive cycles which support the need for a design thinking organization on the long term.

Later we have laid down the criteria system we think serves as a basic guideline for incumbents in disrupted markets. We found that knowledge and financial resources would be the most tangible assets and therefore the best base of analysis. Taking these into account we have outlined the four possible strategic paths that can be followed to survive: aggressive innovation to slow and eventually stop disruptors, trying to create a blue ocean to find new market drivers for mature technology, purposeful self-disruption in order to be able to stay in the game and selling out maximizing net asset present value.

Afterwards we laid down the foundations of advice corporations should follow if their markets are not currently being disrupted, but as disruption is cyclical and not a one-time occurrence proper preparation can save costs and event the company in the upcoming cycle. The three paths that should be followed were the following: pursue some sort of open innovation in order to keep up with market trends, pursue corporate venturing in order to be able to slow and eventually acquire rising competitors and lastly, keep a diversified company so that if inevitable disruption does occur you do not have to resort to sell out and leave town.

Overall we found that within the limitations of the theory of disruptive innovation the playing field has been mapped out and the possible ways of eluding the negative effects accompanying it have been outlined along our paper.

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