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Clayton Christensen's Disruptive Innovation Model

The theoretical Essence

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Clayton Christensen (* 1952 - † 2020)
Professor at Harvard Business School and Founder of the Framework of Disruptive Innovation

“Many people have not really understood the concept”[1]

[1] Clayton Christensen in an interview at the Global Drucker Forum 2016, see Schwertfeger (2016), translated.

Since, according to Clayton Christensen, many management practioners and academics have misunderstood his Disruptive Innovation framework, the following text, based on an analysis of primary sources, is intended to provide clarity and a more precise understanding of the basic mechanisms and terms used therein.[2]

The first theoretical considerations on the phenomenon of disruption were set out by Clayton Christensen and his co-author Joseph Bower in the article “Disruptive Technologies: Catching the Wave”[3] in 1995. Their aim was to provide an explanation for the decline of previously very successful companies and to derive recommendations for management decisions.

Two years later Christensen provided a detailed description of his theoretical framework regarding disruption, which was intended to explain why good management can lead to failure in established companies, in his book “The Innovator's Dilemma”[4]. In this context the distinction between **Sustaining Technologies** and **Disruptive Technologies** is of central importance to him. Christensen characterizes these two types of technologies as following:[5]

Sustaining Technologies are technologies that improve the performance of existing products with regard to parameters that the vast majority of customers in the present market value and appreciate. In other words, sustaining technologies give these customers more or better in terms of product attributes that were important to them in the past or are currently important to them. Christensen explicitly emphasizes that Sustaining Technologies do not have to be necessarily only incremental but can also be radical in nature.

Disruptive Technologies are technologies that initially deliver poorer results in terms of the performance parameters that are decisive for the majority of customers, but lead to products that come with a new attributes or performance features than those previously available, demanded and valued in the present market. Products based on Disruptive Technologies are typically cheaper, simpler, smaller and often more convenient or user-friendly than the previous product offerings. Due to their new feature(s), they create significant benefit and value for customers at the lower end of the market.

For Christensen the possibility of disruption has its origin the fact that technologies can - and often do - develop faster than the performance requirements of the customers.[6] He uses trajectories to illustrate the effects and implications that can be observed during this process.[7]

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2 The aim of this paper is to present the essence of the model of Disruptive Innovation, as developed and advocated by Clayton Christensen, in a highly condensed form. A presentation of the theoretical and empirical criticism of the model will therefore not take place and can be the subject of a separate consideration.

3 *Bower/Christensen* (1995). An analysis of developments on the computer hard disk drives market from 1974 to 1990 serves as the empirical basis and for the illustration of their theses.

4 *Christensen* (1997). To substantiate his theses and provide further empirical evidence, Christensen describes the market changes not only in the Computer hard disk drives industry but also in the steel industry and in excavation machinery.

5 See *Christensen* (1997), p. xiv ff.

6 See *Christensen* (1997), p. xv, xvi.

7 See *Christensen* (1997), p. xvi. Trajectories describe the course of a technology's development based on the change in a performance parameter associated with it over time.

Figure 1 visualizes Christensen's idea regarding the performance trajectories of Sustaining and Disruptive Technologies against the range of performance demanded by the market.

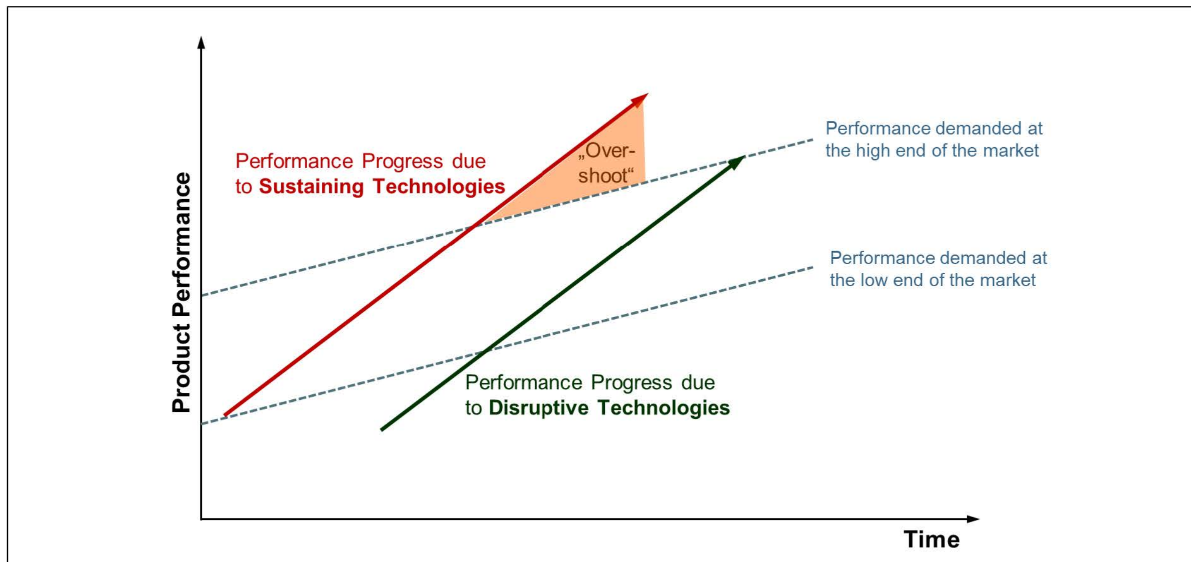

Figure 1: Technology performance trajectories and performance requirements of the market[8]

According to Christensen, the **process of Disruption** is taking place as following:[9]
With the intention of generating ever higher profits, established companies focus on the huge segment of mainstream customers and on high-end customers. They continuously improve their products on the basis of the performance parameters desired by these groups using sustaining technologies (red arrow). This situation creates space for new companies which enter the market at the low end with products based on a Disruptive Technology and initially serve the customer segment located there. Usually the established companies do not react to this market entry, as this customer group is not of interest to them for reasons of low profitability and the inferiority of the new technology to the old one in terms of the previously relevant performance parameters. They abandon this segment that is unprofitable for them and move up the market into the next higher segment, thereby increasing their overall return on sales rate. If the new entrants succeed in improving the performance of the Disruptive Technology over time (green arrow) in such a way that they also meet the higher demands of the market, the products of the established companies will be substituted step by step in all ascending segments, as the established companies will repeatedly abandon their lowest segment in favor of higher sales profitability in upmarket segments. This approach of trading-up often ends in a so-called “Overshoot” (orange area): Established companies offer even customers at the highest end of the market more performance than they need and more than they are willing to pay for. By the time inattentive incumbents realize the gradual erosion of their business base associated with the disruption process, it is usually too late - their demise is inevitable.

8 Own visualization based on *Christensen* (1997), p. xvi.
9 See *Christensen* (1997), S. xvi f.

In order to increase the scope of application and explanation of his model, Christensen modified and extended it in the subsequent publications "The Innovator's Solution"[10] and "Seeing what's next" [11].

Since his model should not only apply to technical products as before, but also to non-technical products, services and business models, he replaces the terms Sustaining Technologies and Disruptive Technologies by **Sustaining Innovations** and **Disruptive Innovations.**[12] As a further modification, Christensen now differentiates between two types of Disruption: On the one hand, **Low-End Disruption** and on the other, **New-Market Disruption.**[13]

In order to better characterize these two types, he distinguishes the following three customer groups:[14] 1. **Undershot Customers**, who buy the existing products but expect even better performance from them and are prepared to pay more for improvements. 2. **Overserved Customers**, who buy the existing products but do not require their full performance and are not prepared to pay more for further performance enhancements. 3. **Non-consumption Customers**, who do not buy the existing products because they do not have the necessary purchasing power or skills to use them. While the first customer group can be satisfied with Sustaining Innovations, the other two groups are good targets for Disruptive Innovations.

Low-End Disruptive Innovations[15] occur in the existing market, where the established companies operate and compete with the help of Sustaining Innovations. The basic course of the Low-End Disruption process has already been described before in the explanation of Disruptive Technologies. As part of his model extension, however, Christensen now considers the core aspect of Low-End Disruptive Innovations in the opportunity for new entrants to address Overserved Customers and to simply take over the lower market segment, not only by means of new technical products, but in particular by means of cost and price-oriented business models, and then gradually work their way up.

New-Market Disruptive Innovations[16] occur when potential customers in the present market refuse to buy the products previously offered because these products do not have the attributes and do not fulfill the performance parameters they desire. New entrants can capitalize on this and create a new market with a distinctly different offering that meets the specific performance parameters demanded by Non-consumption Customers. Besides this new

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10 *Christensen/Raynor* (2003).

11 *Christensen et al.* (2004).

12 See *Christensen/Raynor* (2003), p. 34, 66, *Christensen et al.* (2004), p. xvi f.

13 See *Christensen/Raynor* (2003), p. 43 ff., *Christensen et al.* (2004), p. xvii.

14 *Christensen/Raynor* (2003), p. 51 use the terms 1. „Most attractive (i.e. profitable) customers“, 2. „Overserved customers“ and 3. „Non-consumption customers“. *Christensen et al.* (2004), S. 4 f. speak synonymously of 1. "Undershot customers", 2. "Overshot customers" and 3. "Nonconsumers".

15 See *Christensen/Raynor* (2003), p. 46 ff., *Christensen et al.* (2004), p. xvii cite Walt-Mart's concept of discount supermarkets, Dell's business model for direct computer sales and Amazon's reorganization of book sales as examples for Low-End Disruptive Innovations.

16 See *Christensen/Raynor* (2003), p. 45 f., *Christensen et al.* (2004), p. xvii cite Sony's first portable transistor radio, Canon's desktop photocopier and eBay as examples for New-Market Disruptive Innovations.

value proposition New-Market Disruptive Innovations are generally firstly cheaper, secondly more user-friendly, simpler or smaller than traditional products and thirdly have a significantly lower performance with regard to the parameters preferred by consuming Undershot Customers in the existing market.

For established companies the first risk that occurs is that the New-Market Disruptive Innovations also fulfill the traditionally required performance parameters sufficiently due to continuous performance improvements and the disrupting companies manage to attract consuming customers from the old existing market to the newly created market. This development is often recognized very lately by the established companies because they do not lose any customers at first, as previous only Non-consuming Customers buy the New-Market Disruptive Innovations. The second risk for established companies is the danger that most customers from the old market migrate to the new market, which is dominated by the disruptors, due to a fundamental change in their preference regarding the decisive key performance parameter.

Christensen is convinced that once new entrants have gained a foothold by means of a Disruptive Innovation, no matter if Low-End or New-Market, an unstoppable process starts, at the end of which the established companies are ultimately ousted.[17]

Figure 2 illustrates the above explanations and visualizes Christensen's extended Disruptive Innovation model with the help of a three-dimensional coordinate system.

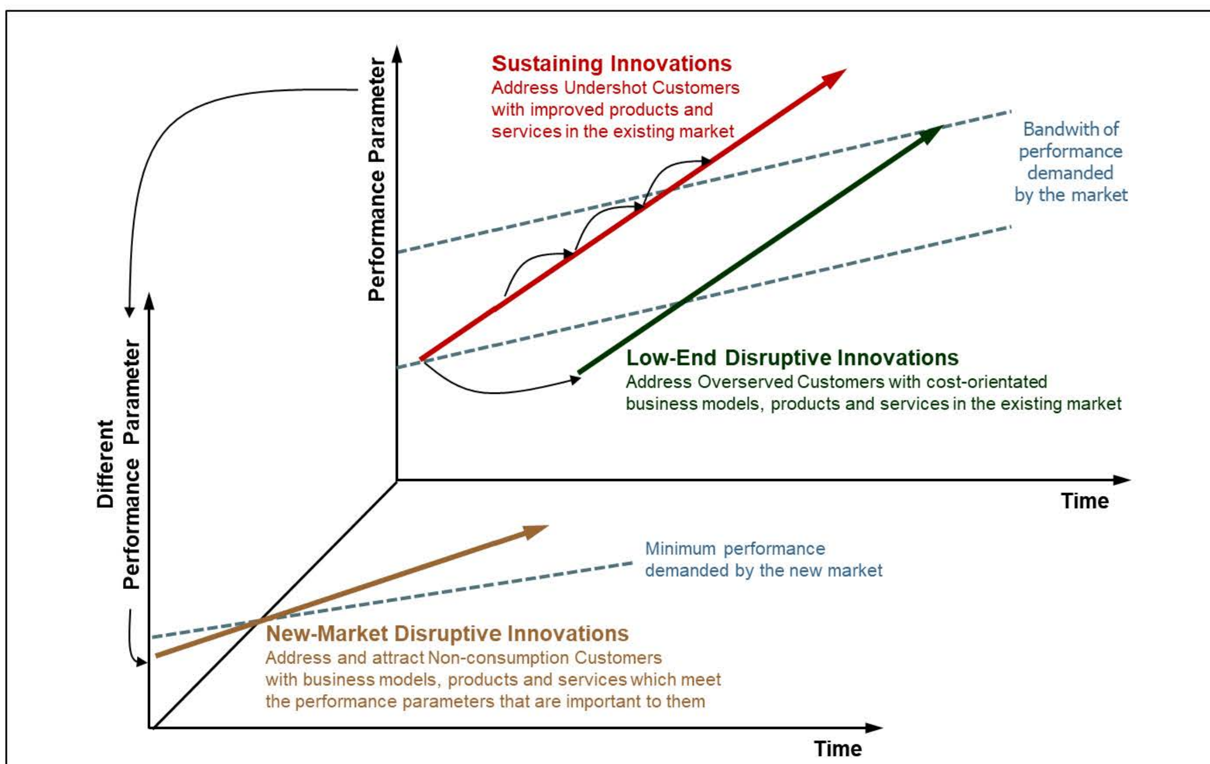

Figure 2: Sustaining Innovations, Low-End Disruptive Innovations, New-Market Disruptive Innovations and performance demanded by the market[18]

[17] See *Christensen/Raynor* (2003), p. 34.

For an established company to be able to respond to Disruptive Innovations in good time, they must be identified at an early stage. This can be achieved by tracking and checking their specific characteristics. Based on the previous reconstruction of Christensen's model[19] and further explanations provided by him until 2018[20] the core characteristics of Disruptive Innovations are as following:

1. Disruptive innovations come from smaller, often less resourced start-ups, new entrants or newcomer companies
2. Disruptive innovations are initially inferior in the performance parameters which mainstream or high-end customers in the present market consider important or decisive for purchasing, so that they are not initially in demand.
3. However, Disruptive Innovations have (1) at least one superior new performance feature and are (2) cheaper and (3) more user-friendly, convenient or simpler to use than the solutions previously available on the market. This makes them particularly attractive for price-sensitive customers, overserved customers, non-consuming customers and/or niche customers.
4. Due to their limited sales potential, the aforementioned customer groups do not represent interesting market and customer segments for established companies striving to continuously increase their return on sales rate and profitability. As a consequence, no strategic (counter) measures are taken by the established companies when these customer groups are approached by disruptors. Often the new competitors are simply ignored.
5. The business model of the disrupting company is not interesting or not feasible for the established companies, so they do not adopt or pursue it.
6. A Disruptive Innovation has necessarily a scalable, expandable and extendable technological core.
7. Mainstream customers really start substituting the previously demanded solutions with the Disruptive Innovation when it meets the performance level for the traditional performance parameters or when the new superior performance feature has become purchasing decisive to them.

[18] Own visualization based on *Christensen/Raynor* (2003), p. 44, *Christensen et al.* (2004), p. xvi.
[19] See *Bower/Christensen* (1995), *Christensen* (1997), *Christensen/Raynor* (2003), *Christensen et al.* (2004).
[20] See *Christensen* (2012a), *Christensen* (2012b), *Christensen* (2013a), *Christensen* (2013b), *Christensen* (2013c), *Christensen* (2015), Christensen et al. (2015), Christensen/Andreessen (2016), Christensen et al. (2018).

Finally, an overview will be provided of approaches that established companies can use to respond to the threat of Disruptive Innovations, according to Christensen et al.:[21]

1. Creation of an autonomous organizational unit
   When a Disruptive Innovation emerges an established company can create an autonomous organizational unit and task it with developing and commercializing of new technical solutions. This unit must not be burdened by the requirements of existing customers and by previous profit expectations and market size thresholds, but must be financed properly and given the opportunity to develop its own new value and innovation creation structures.
2. Organizational ambidexterity
   An established company can use organizational ambidexterity (for example enacting dual structures and processes, subcultures, as well as a cognitively flexible executive team) to manage conflicts expected to arise from pursuing Sustaining and Disruptive Innovations simultaneously. With this approach exploring via an emerging business and exploiting via an existing business, in parallel could become feasible.
3. Preventing the diffusion of the Disruptive Innovation
   An established company can continue to serve its entire traditional market and pursue to remain competitive in relation to the Disruptive Innovator. The incumbent can focus on enhancing the performance of its existing technology but, even more so, aiming to prevent the further development and diffusion of the Disruptive Innovation. To achieve this, an established company may target the ecosystem of the Disruptive Innovation. This is particularly relevant when the Disruptive Innovation cannot simply rely on the existing ecosystem but instead requires a new, distinct ecosystem to realize its full potential.
4. Cooperation and Integration
   Established companies can try to integrate a disruptive new entrant as soon as it challenges their market position. They can do this by entering into partnerships with the Disruptors or licensing their technology once it has reached a certain threshold, or by buying up the new entrants outright.
5. Retrench into a profitable niche
   An established company can withdraw into a market niche. The majority of the present market is left to the Disruptive Innovator and activities are restricted to a small market segment that is defensible and still profitable and in addition of no primary interest for the Disruptor.

[21] See Christensen et al. (2018), p. 1062 ff.

6. Relocate in a different market
   For an established company a complementary or alternative (particularly if there is no sufficiently large niche left in the existing market) approach to the retrenchment option is relocation. This approach involves actively and proactively moving into new markets by identifying and targeting new application areas for the established company's technical solutions beyond its previous uses.

7. Technology reemergence
   An established company that has been disrupted can pursue a technology reemergence approach by redefining the meanings and values associated with their legacy technology. By effectively creating another new dimension and parameter of performance, this approach can enable an established company to re-attract customers who once defected to the Disruptive Innovation.

If non of these measures works and the established company is not able to survive economically under the changed market and competitive conditions caused by the emergence of the Disruptive Innovation, or to be sufficiently economically successful according to its own target criterias, it will be forced to cease its business activities. In this case the following options are available: 1. The sale of the business including the technology to external buyers (sell-off), to existing or new shareholders (spin-off) or to the management (management buy-out). 2. A continuous gradual exit whereby the remaining achievable cash flow is extracted 3. An immediate exit by terminating business activities through liquidation.

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