

Cooperation between large companies and start-ups: the access to drive disruptive innovation

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Abstract

According to Christopher Clayton's Innovator's Dilemma large corporations face a threat of disruptive innovation. By use of products and services with a moderate amount of new technologies, new business models can be created, which later on oust established companies. Particularly start-ups seem to be more prone to drive disruptive innovations than large corporations. This paper illustrates the need for cooperation between large companies and start-ups in order to pursue disruptive innovations and thereby introduces a Disruptive Innovation Strategy. With this under consideration, an extensive classification model of different types of cooperation is generated. This Strategic Classification Model takes previous classification models in literature into account and integrates these in a holistic approach. The core idea of disruptive innovation rather referring to business model innovation than purely technologically driven innovation is reflected in this model. Hence, instead of facing disruptive innovation themselves through various different approaches, large companies are encouraged to face the Innovator's Dilemma and drive disruptive innovation through cooperation.

Keywords: disruptive innovation, innovator's dilemma, cooperation, start ups, Disruptive Innovation Strategy, Strategic Classification Model

1 Introduction

The last three decades have shown that quick and passionate entrepreneurs and in particular, start-ups are more inclined to initiate some innovations than slow-paced, large corporations. Hence the world of innovation has experienced a dramatic shift. The previous advantage of large research and development departments with an extensive financial background and much experience in the market that only a large company can offer, has less effects than before (Anthony, 2012). There have been many attempts by these companies to seek ways to become more entrepreneurial. However, the rapid growth and high profitability of start-ups establish a competitive environment in the market that makes it necessary for companies to become more agile and engage with the start-up community. Hence many large companies try to cooperate with start-ups and turn these entities into "engines of corporate innovation" (Weiblen & Chesbrough, 2015).

The increasing ease of innovation combined with decreasing costs put start-ups in a position to enter new markets and disrupt corporations' established business models (Anthony, 2012). Large companies are not unable to understand a start-up's innovativeness, but complex organizational structures, extensive hierarchies, vast teams and operations on a global scale hinder them in adapting to the unstructured and unfettered behaviour of start-ups (Alsever, 2015). The reason for the trend of increasing impotence of corporations concerning innovation has nothing to do with a change in corporations, but with a change in innovations. Whereas previous connotations of the term innovation had much to do with technological breakthroughs and improvements in performance, today the term disruptive innovation is gaining in importance. This term refers to the enhancement of business model innovation (Christensen et al., 2001). Disruptive innovations have the potential to replace existing products, services or processes. They are hardly predictable and can radically change the business of established companies. Downes and Nunes go even further, predicting a "sudden death" of big companies by "Big Bang disruptions" (Downes & Nunes, 2013).

There is a further change concerning innovation. Many sectors have turned from a closed innovation model to an open innovation model. Hence ideas from other entities outside a company's closed network become more and more relevant and cooperation with start-ups promises improved adaption to the increasingly competitive environment. Bringing together start-ups with established corporations seems to be a beneficial solution for both entities, since each side lacks what the other side may have (Mishall, 2006). Whereas corporations have significant resources, scale and experience in the market, on the other side, start-ups have organizational agility, often promising ideas, a greater willingness to take risks and the desire to pursue rapid growth (Weiblen & Chesbrough, 2015).

To pursue a cooperation with start-ups in order to enhance the access to disruptive innovation therefore seems like a sophisticated approach. However, the question of what kind of cooperation is suitable and what strategy to pursue within this cooperation needs to be answered. Furthermore, the gap between start-ups and corporations is large, which implies challenges for both entities. The cultural differences in a corporation's environment as compared to those in the start-up community can lead to misunderstandings. The last decade, however, has shown that the corporation's aspiration for innovations and organizational speed has led to a capability of change and hence, various corporate engagements with start-ups (Weiblen & Chesbrough, 2015).

2 Why start-ups?

According to Ferrary, there are five reasons for the inability to drive disruptive innovation (Ferrary, 2003):

- Strategic myopia
- Current technology
- Scientific focalization
- Organisational barriers
- Low incentives

In this case, *strategic myopia* means a focus on the optimization of the economies of sales and the increase of profits. Due to the promising success of the core business, managers can be blind to observing uprising niche markets, where most of the disruptive innovations are located. The focus on *current technology* refers to the rejection of new technologies, because of a fear of competition with the current portfolio and its possible cannibalization. A common attribute of large companies is the *scientific focalization*, in which research and development (hereinafter referred to as R&D) concentrates rather on new scientific dimensions than on the fulfilment of market demands. The most famous disadvantages of large corporations are the

organizational barriers, due to which communication and interference between research and development diverge. Finally, the *incentives* for researchers to drive disruptive innovations are low. The compensation system for R&D in large companies is often not designed to promote disruptive innovations (Ferrary, 2003).

In our studies it has established that there is a correlation between disruptive innovations and start-ups. Start-ups initially serve niche markets and, according to Christensen's second principle of disruptive innovation, these small markets do not solve the growth needs of large companies (Christensen, 1997).

This leads to the thought that large companies should simply adapt to a start-up's behaviour and structure and can thereby become more disposed to disruptive innovation. There are indeed innovation strategies by pioneering start-ups that can be adapted by large companies.

Taking specific actions to adapt to a start-up's properties can be successful. This makes a learning process by some large companies possible. However, it is very difficult for a corporation to take a holistic approach to become as disruptive as some start-ups. The main reason for this is that when a company becomes a certain size, at which communication becomes worse, coordination becomes inevitable and organisational structures must be introduced. In their nature, large corporations cannot be like start-ups. The entirety of a corporation's organization, both inside and outside the company, enables the legitimacy and survival of the company. This means that once a company reaches a certain size and becomes a big, sophisticated company, the activities of the organizational structures diverge. This involves a shift from pure exploration towards exploitation of knowledge. This is explained in the following.

Young companies and start-ups are founded due to exploration. They engage in the pursuit of innovation and new opportunities through extensive research, inventions and the building of new capabilities. Exploration means that all these risks are taken into account and involves substantially new and disruptive areas. Sustaining innovations and cumulative organizational learning becomes less relevant (Callaway & Hamilton, 2006, Lane & Lubatkin, 1998). The term exploration goes hand in hand with the terms disruptive and radical innovation, since both are an extreme form of new opportunities.

Once a company reaches a certain point of success or size, it starts to exploit its assets. Exploitation means that the main goal shifts to the increasing the return from existing assets and that existing capabilities are improved. This can be done, for example, through increasing production efficiency, standardization, routinization and systematic cost reduction (Callaway & Hamilton, 2006). Companies relying purely on the exploration strategy miss out on the chance to make profits out of their knowledge. On the other hand, companies relying exclusively on exploitation will suffer from over-aging and obsolescence. Hence, an ambiguous strategy with a precise balance of exploration and exploitation seems to be an ideal solution (Levinthal & March, 1993). However this optimal balance is hard to find. Furthermore, small companies and start-ups have a clear tendency to naturally concentrate more on exploration and large sophisticated companies tend to concentrate more on exploitation of their existing assets and reap the benefits of prior times. Levinthal and March call this the Success Trap. "The returns to exploitation are ordinarily more certain, closer in time, and closer in space than are the returns to exploration" (Levinthal & March, 1993).

The divergence of exploration and exploitation of knowledge shows that the organisational structures, habits, properties and characteristics of start-ups cannot simply be adapted by large companies in a holistic approach. Hence, there are limits to a managerial decision in a large company to be more like a start-up. This does not mean that adaption is determined to fail, but there are thresholds that cannot be overcome (Levinthal & March, 1993).

Instead of adaption, and hence competition, cooperation between start-ups and large companies can be a far more promising approach. Such cooperation forms a strategic alliance

which can extend both exploration and exploitation (Koza & Lewin, 1998). Steve Denning argues that “big companies are constitutionally ill suited to undertake disruptive innovation” and that they should “accept the reality of their own incapacity and get someone else to do it for them” (Denning, 2005).

3 Current classifications of cooperation between start-ups and large corporations

Cooperations between start-ups and large companies can be classified with different approaches, perspectives and intentions. These approaches, for example, can differentiate between degrees of influence on a start-up or the financial dependencies between both parties. A classification can differ when changing the perspective of large companies to the perspective of start-ups. In the end, different intentions of the classification can have multiple results.

In this paper, the classification is carried out from the perspective of large companies with the intention of pursuing a cooperation to drive disruptive innovation. This is a very specific starting point and shall explicitly not exclude other approaches.

There are two major added values of a classification of cooperation types. The first is to determine existing cooperation types, which can be useful for competitor- or benchmark analyses. The second added value is a guideline for companies to establish their own cooperation program with start-ups. Subsequently, current classifications of cooperation between corporations and start-ups are demonstrated and an extensive Strategic Classification Model is then also established.

In literature, the problem of classifying the cooperation or collaboration between start-ups and large companies with the intention of driving disruptive innovation is dealt with in different ways. Four of these approaches are subsequently discussed. These four approaches have been chosen for two reasons. Primarily, these approaches are the only ones that directly refer to the cooperation between start-ups and corporations. There is further literature on the cooperation between different companies or the cooperation of companies with public institutions (E. Brillhante Dias & D. Serra Lopes, 2014). However, in this literature, there is no particular focus on cooperation with start-ups. The secondary reason for the selection of these four approaches is its connectivity with the issue of corporate generation of innovation. It was previously established and is subsequently illustrated that the generation of innovation and the issue of disruptive innovation is an important factor for cooperation with start-ups. No literature regarding cooperation with start-ups that leaves out the benefits of improved innovativeness was found.

In the following, the four approaches by Callaway and Hamilton, Pisano and Verganti, Weiblen and Chesbrough as well as Ferrary are taken into account (Callaway & Hamilton, 2006, Ferrary, 2003, Pisano & Verganti, 2008, Weiblen & Chesbrough, 2015). These approaches are taken as basic model for the new strategic classification model. Here, many different cooperations between corporations and start-ups are investigated in detail.

4 The disruptive innovation strategy

The question of which forms of cooperation in particular drive disruptive innovation has not been completely answered in these models. In part, the reason for this is the lack of a strategy pursuing disruptive innovation, which has not been expressly pursued in the previously mentioned approaches. This Disruptive Innovation Strategy will be introduced subsequently. Based upon this strategy, the Strategic Classification Model with the goal of pursuing

disruptive innovation will be established. First, however, the methodology of the Strategic Classification Model is explained.

The strategy and, accordingly, the managerial decision for a sophisticated company to face the Innovator's Dilemma and the disruptive threat involved, is the first step to pursuing a cooperation with start-ups. This coincides with the confession that the company potentially cannot compete with the fast-moving environment of innovative start-ups.

As previously discussed, the key element of a disruptive innovation is the novelty of its business model. This attribute, combined with a certain (but not significant) amount of new technology, defines the term disruptive innovation. Hence the Disruptive Innovation Strategy is the pursuit of a new business model with either external or internal resources. In the context of Christopher Clayton's double-track strategy, the following question needs to be answered: Besides the core business, is the new niche market in the corporation's business area or in another industry?

Figure 1 illustrates the main decision that must be made by a large corporation when facing a Disruptive Innovation Strategy. The first option is a New Business Model Strategy. Here, the corporation is confirmed as technology leader or at least has a good access to a technology and promotes the company's own technology. However, to be truly disruptive the corporation needs new business models in various other business areas to establish its own technology. Hence, new markets can be opened, new clients won and the company portfolio broadened. The pursuit of a new business model can be explained in the following scenario. A corporation has developed a certain promising technology that it may or may not use within its own core business. To continue developing and finally offering or establishing this technology, the corporation seeks other business models that are new to the company. At first glance, these new business models can seem completely strange and incompatible with the company's key business. This shift, however, can ensure a corporation's survival. An example of this is the Japanese photographing and imaging company Fujifilm. During the rise of digital photography technology, the company saw itself as a market leader of the declining analogue photography technology. Unlike the American competitor Kodak, which was slow and stuck in its business models, Fujifilm transferred key technologies in chemicals and the involved know-how from the old imaging industry into new areas like the cosmetics industry and pharmaceutical industries. While Kodak had to fight insolvency, Fujifilm became more and more successful in these new businesses (Schultz, 2012). This transition is a concrete example of a New Business Model Strategy by a large corporation with existing technologies.

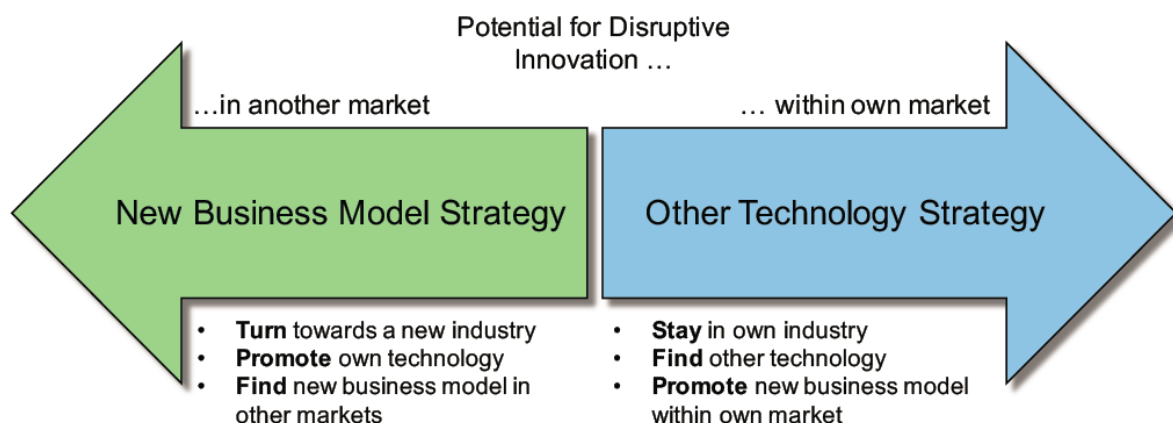


Figure 1. Disruptive Innovation Strategy

The second option seen in Figure 1 is the Other Technology Strategy, in which the corporation chooses to stay in its own industry. Hence, the corporation needs another technology that is eventually promoted into a new business model within the company's own

business area. The thought behind this is that the company sees potential for disruptive innovation within its own market. This can, for example, be its own customer base or industry sector. However, another technology is needed to fulfil that potential. The term other technology is very vague. The meaning of this term implicates the following scenario. A corporation has a certain portfolio with products or services based on a certain technology. To stay within its own market and meanwhile also pursue disruptive innovation, the company has to offer different products or services. This difference implicates a different technology or otherwise another approach to a solution. Through an outside-in approach, which will be discussed in subsequently, the company may come to a solution.

An example for the pursuit of disruptive innovation through other technologies, yet in the same industry, is the Walkman by Sony. Previously the corporation was successful in the audio industry in selling portable transistor radios. The Walkman, however, with a fundamentally differing technology, depicts a business model innovation by reaching out for new non consumers within the same industry. These non-consumers were mainly teenagers who could not afford expensive vacuum-tube radios with a higher performance (Koen et al., 2011).

This Other Technology Strategy can involve self-cannibalization since the corporation seeks another technology that is presumably simpler and can possibly be developed by a start-up and thereby eventually ousts its own products or services. The added value of pursuing this strategy, despite self-cannibalization, can be attributed to Christensen's innovator's dilemma. The risk of leaving out a niche market, which eventually has the potential to displace a company's current business, can be negligent. Hence, when pursuing disruptive innovation, both options of the Disruptive Innovation Strategy must be taken under consideration.

The Disruptive Innovation Strategy cannot be carried out according to a consistent plan. This main decision shall rather provide a guideline and emphasize the key differences involved in the pursuit of disruptive innovation. This also applies to the Strategic Classification Model, which will be discussed hereinafter.

5 Strategic model to classify cooperation types

The purpose of the Strategic Classification Model is to determine a particular type of cooperation between start-ups and companies in the pursuit of driving disruptive innovation. The classification model consists of five steps. In every step, the categories explained in the current classification models are split into new subgroups. The fifth and final step returns to the initial thought of the Disruptive Innovation Strategy and, furthermore, it comes back to the core idea of disruptive innovation. Disruptive innovations mainly consist of a new business model. It can be connected with the introduction of a new technology, which however has less significance.

In Figure 1, each Disruptive Innovation Strategy is coloured either green or blue. This forms a path with increasing granularity of classification and leads to the disruptive innovation to be pursued. However, cooperation models that do not eventually lead to the New Business Model or the Other Technology are coloured in white. These groups constitute dead ends in the Strategic Classification Model. The presence of these white categories of non-successive subgroups does not mean that there is a minor possibility of pursuing disruptive innovations. These white cooperation categories simply state further types that, however, alienate from an innovation strategy.

5.1 Step I

The first step of the Strategic Classification Model differentiates between Callaway and Hamilton's classification of centralized and decentralized Internal Corporate Venturing (ICV)

(Callaway & Hamilton, 2006). Although the authors emphasize a decentralized approach to driving disruptive innovation, the centralized alternative must not be neglected. When choosing a centralized ICV approach, company leaders hierarchically determine whether to promote an innovation from within the company. Know-how, people, ideas and equipment are mainly provided by the company itself. When choosing a decentralized ICV approach, the company broadens its focus and is open for people, know-how and innovation input from the outside. The decentralized ICV approach is thereby independent from the company structure. Both decisions are not exclusive, but they determine the company's main focus. This reflects the term ICV, which deals with the problem of whether research and development is done purely within a certain group inside or outside the company.

5.2 Step II

In the second step, the decentralised ICVs are split into the four groups of Pisano and Verganti's classification (Pisano & Verganti, 2008). As mentioned before, the Consortium and Innovation Community do not fit into the classification of cooperation types between large corporations and start-ups because their governance is flat. With flat governance, the corporation would give their influence away and be on equal footing with the start-up. The corporation's strategy of driving disruptive innovation and following its own goals would no longer be pursued. To maintain control over the company's future R&D, hierarchical governance is required. This leads to the Innovation Mall and the Elite Circle. If the company is not yet aware of the people or entities with whom to work, it can introduce an Innovation Mall with a large variety of potential partners. However, once a selection of the potential partners is made, the cooperation type no longer involves open participation. Hence, only an Elite Circle with closed participation and hierarchical governance truly reflects the cooperation between a large company and a start-up. Therefore, a detour to the Elite Circle via an Innovation Mall is not mandatory but possible. The Elite Circle has a special role in the strategic classification model. It stands for the deliberate selection of a restricted number of partners, with whom the company wants to work. As seen in Figure 1, the cooperation type Corporate Incubation is not connected to the Elite Circle, since here both innovation and people do come from within the company. Hence, people and their ideas were deliberately selected under different circumstances.

5.3 Step III

The third step deals with Weiblen and Chesbrough's approach and its four categories of classification (Weiblen & Chesbrough, 2015). Within the previously mentioned centralised ICV, the question of innovation flow is already answered. Since the company wants to drive innovation from within the company, the innovation flow is inside out. Hence the centralised ICV is split according to its equity involvement into the two groups Corporate Incubation and Start-up Program Platform. An example for this is Bosch's Start-up Platform is a typical example of this split, from an innovation strategy to a centralised ICV approach to Corporate Incubation, where an invention is initially discovered within the company and then promoted as an innovation outside the company. The centralized ICV, which is turned into a Start-up Program Platform, can be seen as a vehicle for an innovation that is developed within the company and then handed over to a third-party entity for further development and market establishment. To refer to an example for the PayPal Startup Blueprint program and Uber, this would mean a hypothetical scenario in which the start-up Uber would further develop PayPal's payment service.

The Elite Circle can be broken down into three categories: The Start-up Program (Outside-In), Corporate Venturing and again the Start-up Program Platform (Inside-out). The Start-up

Program (Outside-In) is the typical case, in which the corporation wants to seek new innovations within its own industry via a decentralised ICV approach and external input. Start-ups contribute as an Elite Circle outside the company's close environment to the company's portfolio through an outside-in approach. An example for this is the AT&T Foundry, which reflects this split. The reason for this cooperation in this case is not lack of innovativeness, but the time gained because of the start-up's development speed. The efficiency of the start-up is then increased because of access to the company's resources. The second group into which the Elite Circle can be split is Corporate Venturing. Unlike the Start-up Program, there is an equity involvement. Instead of just giving access to the company's resources, the start-up is bought by the company and linked with the corporation. A decentralised ICV (here the Elite Circle) can also be split into a Start-up Program Platform. Unlike to the centralized ICV approach scenario previously explained in this step, this directly reflects the example of PayPal and Uber. Here, the start-up did not develop a better payment system but rather a new business model, which is based on this original innovation. Hence, Uber concentrates on the transportation business while exploiting the innovation by the mother company. This means that, although a decentralised approach originally refers to an external source of innovation, the core disruptive innovation comes from within the company. In Uber's case, Paypal wants to drive its own payment system innovation and therefore uses the start-up as an inside-out lever. This is also in line with the company's Disruptive Innovation Strategy of promoting the company's own technology in new business models.

5.4 Step IV

The fourth step is a more detailed subdivision of Weiblen and Chesbrough's classification. As discussed before, the business promoted by Corporate Incubation can turn into a Real Misfit or into a Possible Reintegration. Since the core strategy should be finding new disruptive innovations for the company, a misfit start-up, which is later sold to third parties, cannot be the goal. Like in Bosch's Start-up Platform the possible reintegration of the start-up will always be the main goal in a Disruptive Innovation Strategy. Hence, in this case, the Real Misfit is a dead end.

The classification group of Corporate Venturing can be split into a strategic mission and a financial mission. The promise of high profits at short notice conflicts with long-term ventures to cooperate with a start-up due to strategic reasons. Hence, only a strategic mission is further split down into subgroups and eventually leads to disruptive innovation. These subgroups are the Mixed Corporate Venture, External Corporate Venture and Internal Corporate Venture from Ferrary's classification model (Ferrary, 2003). A Mixed Corporate Venture, which consists of a company's own venture capital firm, with partners from both the large company and the start-up's environment, is the most promising compromise. Therefore, the subgroups of Corporate Venturing as a Financial Mission, or an External or Internal Strategic Mission are dead ends.

Finally, in step four, the Start-up Program Outside-in is subdivided into two classification groups. On the one hand, there is the long-term program, as originally described by Weiblen and Chesbrough. As discussed in the example of AT&T, this is a suitable approach for cooperation to drive disruptive innovation. On the other hand, the Corporate Accelerators established as short-term programs are also suitable approaches, as the previously mentioned example of Nike gadgets shows.

5.5 Step V

The fifth and final step reunites the paths to either the new business model in the corporation's industry or to another technology that essentially means a new business model

in another industry. Here, the core idea of disruptive innovation mainly focuses on a company's new business model, is revived. Both Corporate Incubation, which suits possible reintegration, and the Start-up Program Platform (Inside-out) are suitable cooperation types to seek disruptive innovation through a new business model with existing corporate technology. A striking property of the New Business Model strategy is that there are two main types of cooperation a company may employ to pursue this goal: A cooperation via Corporate Incubation, in which the Start-up is reintegrated into the company or a cooperation via a Start-up Program Platform. As mentioned before, the major difference between those is the equity involvement in the start-up.

A Mixed Corporate Venture can be a solution for pursuing a new business model in another industry by exploiting existing technology. The Corporate Venture, according to Weiblen and Chesbrough has an outside-in direction of innovation flow and therefore is associated with the Other Technology Strategy. If for example a company had a sophisticated technology it is hard to find a reason, why it should seek for an Elite Circle and pursue the cooperation in buying a start-up to drive disruptive innovation. On the other side the example of a company that seeks for new technology in buying a promising start-up is a common scenario. Finally, both the long-term Start-up Program (Outside-in) and Corporate Accelerators are suitable measures to seek for technology that constitutes a disruptive innovation and fits in the portfolio of the company's industry.

Eventually the pathways lead to the disruptive innovation the corporation strives to achieve. On the one side, there is the new business model in another industry. It is illustrated as an entire unit, since this new business model refers directly to the generation of disruptive innovation, meaning getting access to new markets. On the other side, the paths lead to the other technology. This can eventually lead to a new business model in the company's own industry. Since this is an intermediate step, in Figure 2 the units are illustrated separately. This subdivision is done to emphasize the core idea of disruptive innovation. Only the generation of new business models, in the corporation's own industry or in another industry, can eventually lead to disruptive innovation. Hence, technology has an indirect influence on the disruption of an innovation.

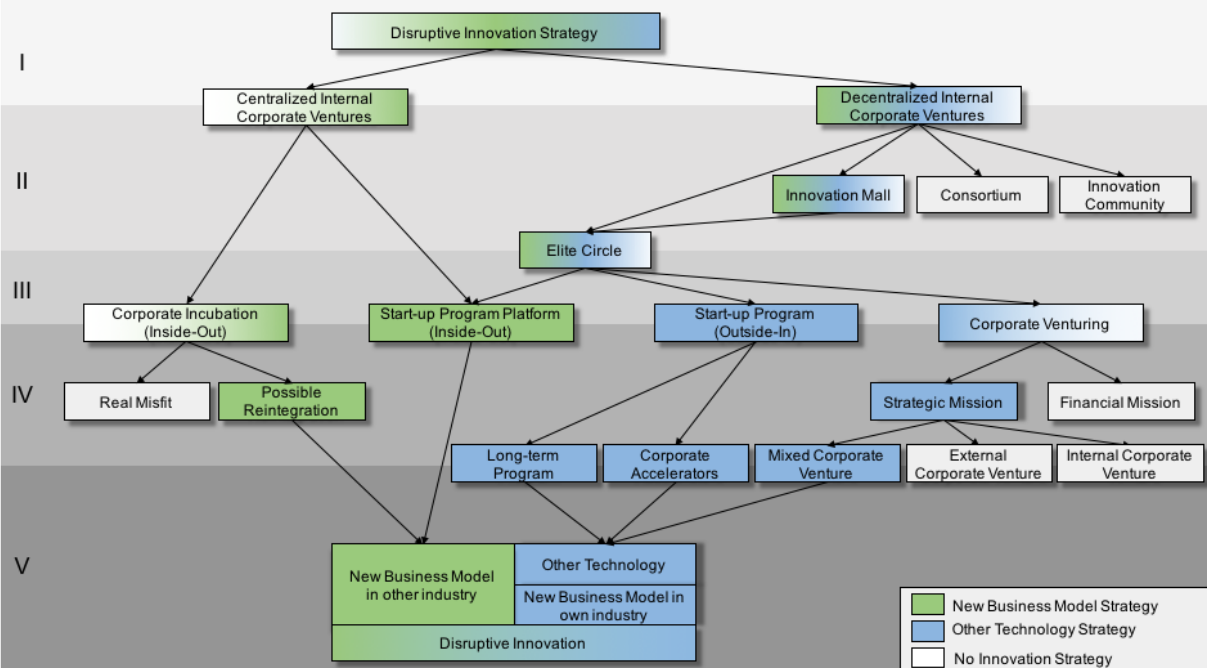


Figure 2. Strategic Classification Model

6 Conclusion

The developed Strategic Classification Model categorizes company approaches to engaging in cooperation with start-ups, with the intention of enhancing its access to disruptive innovation. There are different possibilities to engage in cooperation, but one major strategy called the Disruptive Innovation Strategy emerges. In this cooperation, the start-up can be used as a lever to either access these new businesses or discover other, more suitable technologies. The Strategic Classification Model further reflects the core idea of disruptive innovation in contrast to radical innovations. Ultimately, both the direct assignment of cooperation programs to certain distinct cooperation types within the Strategic Classification Model and the reverse iterative pathway underline the connection between the pursuit to drive disruptive innovation and the corporate decision to engage in cooperation with start-ups.

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