The effects of Equity and Trust in Collaborating with Corporates on the Start-ups' Innovativeness

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Contents

Little research has been done on the collaboration between start-ups and corporates. Prior research mainly focusses on the corporate point of view. This study contributes to the effects of the collaboration between start-ups and corporates on the start-ups' innovativeness by investigating how equity involvement (of the corporate in the start-up) and trust (of the start-up in the corporate) influence exploratory and exploitative innovation. This study further examines the moderating role of trust on the relationship of equity and the two types of innovation. Results indicate that equity has a U-shape relationship with both exploitative and exploratory innovation. When trust interacts with equity, we see a contribution of positive trust when the equity is low. If the equity rises, however, the positive effect of trust on the relationship between equity and exploratory innovation decreases. When trust is low, the opposite appears. Therefore, we can conclude that in the context of start-up and corporate collaboration, trust and equity are substitutes of each other.

Introduction

Young, small companies are more effective in innovation than large companies, though larger companies have more R&D input (resources) available (Shan, Walker, & Kogut, 1994). Each company has what the other lacks; start-ups have the ideas, agility, and willingness to take risks, whereas the corporates have the resources, scale, power, and proven routines. Combining these strengths can enhance great things (Weiblen & Chesbrough, 2015). "The new leaders in innovation will be those who figure out the best way to leverage a network of outsiders" (Pisano & Verganti, 2008, p. 1). Great ideas sprout from everywhere and it is not sensible for a company to innovate independently (Pisano & Verganti, 2008). Corporates often work together with start-ups for strategic reasons, which allows them, for example, to use their innovativeness when working together on product innovation, be provided with information about possible acquisitions, or even block new products of their partner that may compete with their own (Katila et al., 2008; Wadhwa & Kotha, 2006).

Corporates are powerful, resource-rich and highly desirable partners (Katila, Rosenberger, & Eisenhardt, 2008; Stuart, Hoang, & Hybels, 1999). A new company (start-up), described as resource-poor, is motivated to collaborate with corporates to get access to the corporates' resources (Katila, Rosenberger, & Eisenhardt, 2008). Start-ups and small businesses play an important role in economic growth and job creation in society (Winborg & Landström, 2000). From the number of starting businesses, 40-60 per cent does not survive the first five years (Cawley, 2016), as start-ups face, amongst others, the challenge of getting long-term external finance, as noted by Winborg and Landström (2000). This is one of the reasons a start-up wants to collaborate with a corporate. Although the literature mentions several reasons why a start-up should collaborate with a corporate, the effects of this relationship on the start-up are not clear yet (Katila et al., 2008).

As innovativeness is often the reason for the collaboration, it is useful for the corporate to know what the effects of the different types of collaboration are, which they value high. For the start-up in the collaboration with the corporate, it is useful to know how this collaboration will affect its most valuable resource, i.e., innovation. Innovation is often split into exploratory innovation and exploitative innovation. As it has been argued that both are important for companies to develop (Jansen, Van den Bosch, & Volberda, 2006) they will both be considered in this research.

A collaboration between a corporate and a start-up can have multiple forms. For example, it can be flat or hierarchical (Pisano & Verganti, 2008), with or without equity involvement, integrated with core business of the corporate or both operating separately (Weiblen & Chesbrough, 2015). Pisano and Verganti (2008) argue that the way to collaborate, should be determined by the company's strategy. Traditionally, there was often equity involved when a corporate started to work with a start-up. Newer models, however, are based on sharing knowledge and technology (Weiblen & Chesbrough, 2015). Öberg, Grundström and Jönsso (2011) point out a negative effect of a collaboration with a corporate on the innovativeness, in case the equity share is larger than 50% (acquisition). Katila et al. (2008) also show their doubts about the collaboration between corporates and start-ups with equity involvement; they highlight the selfish behaviour the corporate may have, which negatively effects the start-up.

Research on alliances shows that collaborations have a positive influence on innovation, due to benefits which are gained from these ties, such as access to knowledge, complementary resources, and scale (Ahuja, 2000; Berg, Duncan, & Friedman, 1982). The possible level of effectiveness of this knowledge share is based on the relationship's (tie's) strength between the two firms. Trust is often mentioned as antecedent which enables knowledge share (Gulati & Singh, 1998; Li, 2005; Van Wijk, Jansen, & Lyles, 2008) and, therefore, innovation (Ahuja & Katila, 2001; Powell, Koput, & Smith-Doerr, 1996). Also, the literature on the tie's strength, which is strongly related with trust, supports the positive relationship with knowledge share (McFadyen, Semadeni, & Canella, 2009) and innovation (Rindfleisch & Moorman, 2001).

Summarizing and drawing from these theories, this research focusses on the relationship of both equity and trust on the start-up's exploratory and exploitative innovation. Because it has been argued that trust could act as a supplementary factor to equity when it comes to alliance performance (Gulati & Singh, 1998), the moderating role of trust on the relationship between equity and the two types of innovation will also be measured.

The research question is: How do equity and trust influence the exploratory and exploitative innovation of a start-up collaborating with a corporate and how does trust moderate the effect of equity on the both types of innovation?

Theoretical background

A reason to form inter-organisational collaborations is to get important insights in how to better comprehend dynamics that alter the competitive landscape like disruptive technologies (Gulati, Nohria, & Zaheer, 2000). An inter-firm alliance creates advantages over markets (Li, 2005) and profiles itself with increased globalisation and competition (Das & Teng, 2000). Collaborating with a corporate has many advantages for the access to resources such as knowledge and capital, although it can also have downsides. It may limit the corporates' freedom to pivot and collaborate with the corporates' competitors. It is also argued that a collaboration between such different parties is not easy to achieve (Weiblen & Chesbrough, 2015) as, in general, strategic alliances tend to have relatively high instability rates (Das & Teng, 2000). When firms differ too much from each other, they will find it is hard to collaborate. Differences can be on organisational culture, managerial practices, strategic orientations, and technological systems (Park & Ungson, 1997; Das & Teng, 2000). Operational conflicts result from incompatible organisational cultures and operational practices, which will reduce the effectiveness of the alliance (Das & Teng, 2000). However, when firms each bring different (complementary) resources to the table, it can enhance alliance Performance (Das & Teng, 2000).

Innovation

Due to the dynamic nature of most markets, almost all industries are engaged in continuous or periodic innovation (Hurley & Hult, 1998). Organisations innovate to be competitive, but in many cases, they do not possess the knowledge which is required to produce those innovations (Wadhwa & Kotha, 2006).

Innovation is increasingly being done at small and mid-size entrepreneurial companies (Huston & Sakkab, 2006). Historically, R&D was internally organised at firm-level (Powell et al., 1996). Although large companies still perform much R&D internally, there is a tendency nowadays that larger companies reach out to smaller companies for their innovative skills (Huston & Sakkab, 2006). The reasons that start-ups are more successful at innovation are, amongst others, their flexibility and promising ideas, their agility, their entrepreneurial, and their willingness to take risks. Examples like Facebook and Tesla Motors show that the start-ups that produce innovations, are the ones that achieve sustainable competitive advantage. As these innovations disrupt the market, the need arises for large companies to move faster. One way to do so is to collaborate with start-ups (Weiblen & Chesbrough, 2015).

In the relevant literature for this study on alliances, there are studies on innovation, which, in most cases, are divided into exploratory and exploitative innovation (e.g., Powell et al., 1996), and studies on innovativeness (e.g., Christensen, 2006). Innovativeness can be described as a firm's openness to new ideas as an aspect to their culture. Antecedents to innovativeness are, for example, emphasis on learning, participative decision making, support, and collaboration. Together with the firm's capacity to innovate, which is the ability to adopt or implement new ideas (the operational part), innovative output arises (Hurley & Hult, 1998).

Various literature argues that both exploratory and exploitative innovation, also known as radical and incremental, are important for companies to develop simultaneously (Jansen, Van den Bosch, & Volberda, 2006). Exploratory (radical) innovation is developing new products and/or services and persuading new knowledge for emerging customers or markets. Exploitative (incremental) innovation is the usage and expanding of existing knowledge and extending existing products and services to existing customers. Pursuing both is described as ambidextrous (Jansen et al., 2006), which may lead to superior performance and competitive advantages (Jansen, George, Van den Bosch, & Volberda, 2008).

Exploitative innovation is important to companies' stability, as companies need to retain their customers by exploiting current products and services. To attract new customers, they need to explore new ideas and develop new products and services, i.e., explorative innovation. Both ask for a different approach and different activities. Exploratory innovation requires (re)search, variation, and experimentation that derives from decentralization, loose cultures, and less formal processes. Exploitative innovation requires efficiency, formal processes, and refinement (Jansen et al., 2008). As this research focusses on innovation in general, both exploratory and exploitative innovation will be considered when looking at the start-ups' innovativeness.

Innovation is a result of an increased knowledge base (Ahuja & Katila, 2001; Henderson & Cockburn, 1996), which can grow by investments in knowledge enhancement or acquiring knowledge from external parties (Ahuja & Katila, 2001; Cohen & Levinthal, 1989), for instance by forming an alliance with another firm. Powell et al. (1996) confirm the strong relationship between knowledge and innovation in the context of inter-organisational relationships. They argue that if knowledge is distributed among parties, which brings competitive advantage, the locus of innovation is found in the network. According to these authors, the network is the 'locus of innovation', because it provides timely access to knowledge and resources that would otherwise be unavailable (Powell et al., 1996). Although access to knowledge and information is described as an antecedent to innovation, the access to new knowledge is particularly convenient in exploratory innovation, as the essence of exploration is experimenting with alternatives, which requires learning and new information. Exploitation is, on the other hand, the refinement and extension of existing competencies (Powell et al., 1996). In this case, new information is less required. However, it is not said that obtaining (new) information would not enhance innovation as well.

In research on alliances, the innovation is often measured of the alliance itself (Powell et al., 1996). This underlying research, however, will focus on the innovativeness of the start-ups, as the purpose is to measure the effects of a collaboration on the innovation of the start-up. Like Powell et al. (1996) point out, the collaboration derives from the firms' internal assets and will enhance the company's assets. Also, the innovativeness of both alliance and firm profit from knowledge sharing, according to Ahuja and Katila (2001) and Powell et al. (1996. Knowledge share will, therefore, be used in this research as an indicator for expected innovativeness of the start-up.

Equity involvement

From a start-up's point of view, the reason to enter in a corporate investment relationship is often the need for resources (Baum, Calabrese, & Silverman, 2000), such as long-term external finance, which is often a challenge for start-ups (Winborg & Landström, 2000). Other desired resources to start a collaboration are new (technical) skills or capabilities from partner firms (Mowery, Oxley, & Silverman, 1996). Acquisitions can enhance the use of each other's resources like financial or manufacturing resources, attaining a position within an established network, knowledge, or technology (Öberg et al., 2011).

The common definition of an alliance is any voluntarily initiated cooperative agreement between firms that involves sharing, exchange, or co-development of capital, technology, or firm-specific assets contributed by partners (Gulati & Singh, 1998; Gulati, 1998). Popular forms of strategic alliances are: Direct equity investments; joint ventures; research and development (R&D) agreements; research consortia; joint-marketing agreements; buyer-supplier relationships; and so on (Das & Teng, 2000). An alliance can have different governance structures, which are the formal contractual structure partners use to formalise the alliance. One way to express the alliance's governance is by equity involvement (Gulati & Singh, 1998). Strictly looking at the level of equity involvement, alliances are often categorized into the following three categories. If an equity share is larger than 50%, it is called a majority equity investment, which goes by the same definition as acquisition. It is called a minority equity alliance, if one company (in this case: a corporate) has a share smaller than 50% in the other company (start-up) (Das & Teng, 1998). Non-equity alliances have, as the name puts it, no equity involvement, but both parties are in a contractual agreement (Das & Teng, 1998).

Equity can be used to indicate the level of hierarchy control (Gulati & Singh, 1998). Examples of hierarchical control are: Staffing; reporting structure; meetings; policies; and procedures (Das & Teng, 1998). Gulati and Singh state:

> At one end are joint ventures, which involve partners creating a new entity in which they share equity and that most closely replicate the hierarchical control features of organizations. At the other end are alliances with no sharing of equity that have few hierarchical controls built into them (Gulati & Singh, 1998, p. 781).

Hierarchal control is often used to manage uncertainty. Uncertainty may arise from contracting problems and pervasive behaviour. It is also more likely that firms that have appropriation concerns, organise their alliances with more hierarchical contracts (Gulati & Singh, 1998).

When a corporate has an equity share in the start-up, it has (partial) ownership of the start-up, through which it can control the start-up. If the equity share increases, the voting power increases as well. According to some researchers, this is the ultimate power of control

(Blodgett, 1991). In case of a majority equity involvement, the hierarchical control increases. In minority equity alliances, there is often only ownership control, meaning that the level of control has a strong relationship with the percentage of equity. In non-equity alliances neither of these control mechanisms are present (Das & Teng, 1998).

Baum, Calabrese and Silverman (2000) investigated the effects of alliances on start-ups' performance and innovativeness. Their findings show a positive influence on performance and innovation. Their advice to start-ups is thus: "Don't go it alone" (Baum, Calabrese and Silverman, 2000, p. 288). Alliances can be particularly effective to enhance innovation, as accessing these assets are necessary for success (Baum et al., 2000). During an alliance, equity arrangements can support greater transfer of capabilities (Kogut, 1988; Mowery et al., 1996) and absorptive capacity, which lead to effective capability transfer (Cohen & Levinthal, 1990; Mowery et al., 1996). Alliances are more efficient in aggregating, sharing, or exchanging valuable resources with other firms in contrast to mergers and acquisitions. As Das and Teng (2000) argue, it is about creating the most value combining one's existing resources with the resources of the other.

Studies that focused on majority equity alliances and acquisitions, show a less positive view on the effect of these on the innovativeness. For example, Christensen (2006) found that the driving forces of innovation – entrepreneurial spirit, innovativeness, and creativity – could not sustain when a start-up was acquired by a larger company. Arguments were that smaller organisations are more flexible and, therefore, more efficient in developing innovations, have less boundaries, and have more contact with customers (Christensen, 2006). Katila et al. (2008) describe that corporates as start-up partners are at a higher risk for misappropriate resources than, for example, venture Capitalists, because the corporates' strategy has the highest priority. The corporate can, for example, block new products of the start-up that may be a substitute for their own. In addition, they often do not take a seat on the board because they do not want to get too obtained with the start-up (Katila et al., 2008). According to Öberg et al. (2011), an acquisition can influence the identity of the acquired company. They also describe the possible downside of an acquisition, such as a decreased autonomy and negative changes on relationships with other parties in case the acquirer does not allow the innovative company to interact with other parties. The authors also confirm the negative effects on the innovativeness of the acquired party because of losing staff and autonomy, and transference of the acquired party into the acquired structure. The loss of staff means losing knowledge, which indirectly means losing innovativeness. The loss of autonomy can directly influence the innovativeness (and entrepreneurial forces) negatively (Öberg et al., 2011). Reasons for start-ups not to form relationships are: damaging misappropriation of own resources by their partners, or too little resource value (Katila et al., 2008).

Concluding, equity involvement can arrange knowledge transfer. However, if the amount of equity rises and there is a majority equity alliance or acquisition, there are mainly negative

effects on the innovativeness of the start-up. As no explicit distinction is found for exploratory and exploitative innovation, both are expected to profit from knowledge share. In addition, no reasons have been found that a majority equity alliance has impact on one of the innovation types. Therefore, the hypotheses are:

Hypothesis 1: There will be an inverted U-shaped relationship between equity involvement and exploratory innovation. The higher the equity involvement, the higher the exploratory innovation.

Hypothesis 2: There will be an inverted U-shaped relationship between equity involvement and exploitative innovation. The higher the equity involvement, the higher the exploitative innovation.

Trust

According Rousseau, Sitkin, Burt, and Camerer (1988), the definition of trust is the willingness to accept vulnerability based on positive expectations about another's intention or behaviour. Close and frequent interaction between parties create a strong relationship (strong tie) (McFadyen et al., 2009). Such relationships show a higher level of trust (Levin & Cross 2004; McFadyen et al., 2009). Organisational trust in inter-firm relations arises when one party has confidence in an exchange partner's reliability and integrity (Gulati et al., 2000; Li, 2005).

The concept of trust is used extensively in the international business literature about inter-firm collaborations, in the social capital literature, and in the social network literature, to conceptualise the confidence and goodwill one (organisation) has in its partner (organisation) (Gulati et al., 2000; Li, 2005; Zaheer, McEvily, & Perrone, 1998).

The different theories subscribe the necessity of trust in alliances for them to be successful (Das & Teng, 2000; Li, 2005), because trust has different positive influences on alliances. For example, trust facilitates cooperation and coordination, generates relation commitment, and can even predict inter-organisational cooperation (Li, 2005; Morgan & Hunt, 1994; Smith, Carrol, & Ashford, 1995). In addition, trust is one of the psychological determinants for a cooperative relationship, which, in turn, positively influences the firm's conduct and performance (Gulati et al., 2000; Li, 2005; Nahapiet & Ghoshal, 1998). Other positive influences of trust in an alliance are: reduction of transaction costs in several ways (Gulati et al., 2000); induction of desirable behaviour (Madhok, 1995); and reduction of the extent of formal contracts (Larson, 1992). Finally, trust foresees in a smooth relational exchange (Li, 2005; Macneil, 1980), which results in enhanced innovation (Ahuja & Katila, 2001). "Relational exchanges, as opposed to discrete exchanges, take place on the basis of a historical and social context, such as trust" (Das & Teng, 2000, p. 81). That is why trust is effective in facilitating knowledge exchange (Li, 2005; Nahapiet & Ghoshal, 1998; Zaheer et al., 1998). The process of knowledge sharing is influenced by trust because of the increased openness and the facilitation

in joint problem-solving (McEvily, Perrone, & Zaheer, 2003). From a tie strength perspective, which is strongly related to trust (McFadyen et al., 2009), the relationship of trust with knowledge transfer and innovativeness is also being underlined (Rindfleisch & Moorman, 2001).

Although the relationship between trust and innovation has not been described much, there are reasons to believe trust has a positive relationship with innovation, as trust is a facilitator to a solid collaboration, which will enable relational exchange like knowledge exchange. In literature, strong relationships are found between knowledge exchange and innovation, and, therefore, a positive influence is expected to the two types of innovation. In the specific literature on exploratory and exploitative innovation, it is mentioned that exploratory innovation mainly profits from *new* knowledge (Powell et al., 1996). It is also argued that exploitative innovation uses knowledge to improve existing products and services. In most literature about the relationship between knowledge (share) and innovation, no subcategories were mentioned. Therefore, a positive linear relationship is expected between trust and exploratory innovation, and trust and exploitative innovation.

Hypothesis 3: The higher a start-ups trust in the corporate they collaborate with, the higher the exploratory innovation.

Hypothesis 4: The higher a start-ups trust in the corporate they collaborate with, the higher the Exploitative innovation.

Interaction Trust and Equity

Inter-firm trust as a benefit in economic transactions (e.g. alliances) is strongly emphasized (Gulati & Singh, 1998). According to Arrow (1974), trust is perhaps the most efficient governing mechanism for economic transactions. When there is a high level of trust, the need for hierarchical controls such as equity is reduced, as firms consider that hierarchical controls are no longer necessary when there is trust (Gulati, 1995a; Gulati & Singh, 1998). Because it is argued that a firm finds self-interest more important than its alliance partner, partner firms find it hard to rely on trust. Developing trust, and thereby keeping off the opportunism behaviour, can be expensive as alliance partners should develop all kinds of devices. “A lack of interfirm trust can, thus, seriously undermine the basis for successful alliances” (Das & Teng, 2000).

There are, however, different opinions about whether trust itself is a control mechanism or that it is a supplement to control mechanisms like equity involvement. Dasgupta (1988), for example, argues that trust is especially needed – as a control mechanism – when the trustor

has inadequate control over the trustee. On the other hand, there are arguments that trust is a substitute for hierarchical control (Aulakh, Kotabe, & Sahay, 1997), arguing that trust is not a control mechanism. Madhok (1995) also argues that relying on trust and managing opportunism are two different approaches. Trust is about having a positive attitude towards others' motivations and about believing the other will do what serves the trustor's best interest, even in absence of control, instead of influencing and affecting others' behaviour (control) (Das & Teng, 1998). In contrast of this substitutive view, Das and Teng (1998) argue that there is a supplementary relation between trust and control. Although trust and control can both be costly (Das & Teng, 1998), they jointly contribute to the level of confidence (Beamish, 1988). So, in case of equity involvement, whether this is a minority equity investment, a joint venture, or an acquisition, trust still adds value to the cooperation. However, when there is no equity involvement but a high level of trust, this does not necessarily mean control is not desired. Having both could be optimal for a solid cooperation.

Both the relationships between equity and innovation on one hand and trust and innovation on the other hand, are described in the previous chapters for exploratory and exploitative innovation. Deriving from the interaction equity, trust, and innovation have with each other, the expectation is that trust has a moderating role on equity involvement as both have a supplementary relationship (Das & Teng, 1998). In addition, it is expected that trust has a positive relationship with both exploratory and exploitative innovation (Li, 2005). Whereas the expectation was an Inverted U-shape – bending at 50% – influence for the relationship between equity and innovation, the expectation is that trust positively moderates this relationship, meaning that the bending shows later.

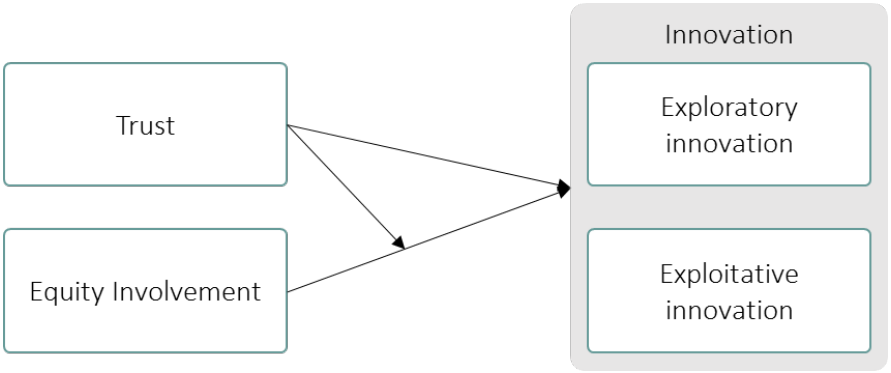
Hypothesis 5: As trust increases, the inverted-U relationship between equity and exploratory innovation will flattens.

Hypothesis 6: As trust increases, the inverted-U relationship between equity and exploitative innovation will flattens.

Sub-questions

1. What is the relation of equity on exploratory and exploitative innovation in collaborations between start-ups and corporates?
2. What is the relation of trust on exploratory and exploitative innovation in collaborations between start-ups and corporates?
3. What is the relation between the trust and equity and how does trust moderates the relationship of equity on exploratory and exploitative innovation?

Conceptual model



Methodology

Sample

The empirical research of this thesis was conducted among start-ups operating in different branches (industries), which collaborate(d) with corporates. Start-ups from all over the world have been approached, from the Netherlands to India, including the UK and France. The approached start-ups operate in multiple branches. This research did not focus on a specific branch or country because of the aim of having a sample from which the outcomes can be generalised. After defining the focus group, which is new companies (start-ups) existing 0-5 years and collaborating with a corporate, the prospects were gathered.

Data collection

This research is typically useful for corporates and start-ups that plan a collaboration. The ability to approach start-ups directly was more difficult than expected as corporates did not want to share the names of the start-ups they collaborated with, as this was confidential. The final prospect list of start-ups that could be reached directly, contained 110 prospects (by e-mail and face to face). The contact persons of the corporates and platforms that decided not to cooperate, mentioned the following reasons: confidentiality; start-ups getting bothered with too many surveys; lack of time; and not being present due to holiday. In addition, many correspondents did not reply.

The indirect number of start-ups that were planned to be approached via contacts at corporates and start-up accelerators or platforms was going to be around 5,282. The actual

number of start-ups that were approached, according the confirmation of the contacts, was around 112. These start-ups met the requirements of 0-5 years and of collaborating with a corporate. Different calls for participation were posted via social media such as Facebook and LinkedIn, in, e.g., start-up groups with a total member group of 228,022. The response target was more than 80 responses. To motivate people to fill in the survey, €1, - per response was donated to a charity of choice (the respondents had a choice of three charities at the end of the survey). The final response was 32. The timeframe for collecting responses was extended from four to seven weeks to get more responses and, therefore, additional start-ups and accelerators were approached, with the result that, at the end of this period, fifteen additional responses were collected. The low response rate is considered during the analysis of the data and the formalisation of the results. The final response rate of the approached start-ups is 29%. However, this rate is probably lower, considering that some responses may have come from the social media messages instead of from the direct approached start-ups.

Variables

In the survey, the start-ups were asked to choose one collaboration with a corporate, as multiple questions were asked about their specific alliance (see appendix B). To answer the research question, scales of innovativeness and trust, and questions on equity involvement and time of collaboration were part of the survey. Control variables were added to measure whether they could influence the innovativeness, next to the defined independents. Also, questions were asked to check whether the start-up meets the requirements and to analyse whether the response can be generalised.

The survey used three existing scales from the literature. To measure the innovative output of the start-up, the two scales of Jansen et al. (2006) for exploratory and exploitative innovation were used. Jansen et al. (2006) mentioned that, at that time, no appropriate scales for these subjects were available. Therefore, they reviewed relevant literature and generated a pool of items for each construct and performed interviews with managers to enhance the validity (Jansen et al., 2006).

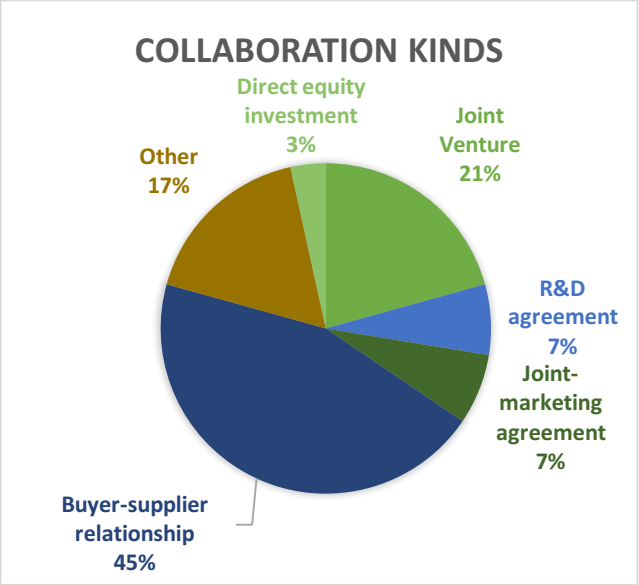
The inter-organisational trust scale from Luo (2008) was used to measure the trust of the start-up in its alliance partner (i.e., the corporate). Luo (2008) mentioned in his research that he derived his items using scales from studies from Zaheer et al. (1998) and Inkpen and Curral (1997). The reliability and validity of these items were confirmed (Luo, 2008).

All items of both constructs were used and put together in a survey. Additional questions were added on equity involvement to gather the additional required information to investigate the hypotheses. The survey was available in both Dutch and English. Both were checked by native speakers and cross-checked by people who have a good understanding of both languages.

Data analysis

The average company age of the start-ups is 2.88 years. Two respondents (6.26% of total) answered that their company was older than five years at the time of the survey. This question, however, was not correctly formulated. The company age was asked by the question: "In what year was your company founded?". What should have been asked, is what the age of the company was at the end of the collaboration. For the two companies older than 5 years, it was checked whether the collaboration was still active and how long it was going on to check whether this collaboration was there during the five years of existence. For one start-up, the collaboration started at the end of the 5-year existence; the other company indicated that both the age of the company and the collaboration time with the corporate were six years.

The respondents could indicate what type of collaboration they have with the corporate to check whether all types of collaborations were represented. The largest represented type of collaboration was *buyer-supplier relationship* (45%). *Joint venture* (21%) was the second group and *other* (17%) the third. The respondents had the option to enter a description in a free field when choosing *other*. All of them did and filled in: Joint product development; commercial agreement; licensing agreement; pilots; use of (free) digital platform; and use of "craftsmanship".



24 branches of start-ups are represented in the data. 23 branches of corporates (the start-up collaborates with) are represented. One branch is represented in the data with a maximum of three times (not more than 10%; please refer to Appendix C). 29 of the 32 respondents filled in the name of the corporate they collaborated with. Of these 29 answers, 27 unique entries were done, of which 2 times 'anonymous', 2 times 'BMW' and one time 'anonymous (American company)'. All other corporate names were unique (see Appendix D). With a total number of 27 different corporates, we have a good view of how mainly Dutch corporates are being experienced during a collaboration.

91% of the collaborations was still active at the time of the survey. The ones that already ended,

ended between the present and a maximum of thirteen years; the oldest company started in 2001 and had a collaboration of 3 years.

The job title of the respondents was in 69% of the cases C-level or director/owner; 19% management; and 12% other functions. Other functions contain job titles such as *sales* and *marketing*.

Level	*NR.*	*%*
C-Level/ Director/ Owner	22	69%
Management	6	19%
Other	4	12%
Total	**32**	**100%**

Dependent variables

The dependent variable, being innovation, was split into two scales for exploratory innovation and exploitative innovation. *Exploratory innovation* exists of seven items which are related to development of new products. *Exploitative innovation* exists of seven items as well. Both variables were measured on a 7-point Likert scale.

32 completed questionnaires were returned. Firstly, the Cronbach's alpha was checked, being 0.73 for exploratory innovation (7 items) and 0.84 for exploitative innovation (7 items). Afterwards, a factor analysis was performed, using the principal component analysis in SPSS. The items which were discriminant valid were deleted until three items were left for exploratory innovation, being 2, 3 and 4 (a^1 = 0.79) and two for exploitative innovation, being 10 and 13 (a = 0.74). Both scales exceed the recommended value of 0.7 (Nunnally, 1978).

Independent and moderating variables

To measure the *equity*, two questions were asked: "How much equity did the corporate you collaborate(d) with, have in your company at the start of the collaboration?" The same question was asked for the end of the collaboration. 28% of the respondents answered that there was more than 0% equity involvement at the end of the collaboration and 31% of the respondents had indicated that there was more than 0% equity at the start of the collaboration. In eight cases, an equity change occurred during the start and the end of the collaboration. The average increase of equity of the total group was 2.28%. This relative low percentage can be explained, because there were also cases with a negative percentage. Only equity at the end of collaboration is used in the calculation, as the end of the collaboration is measured to determine the collaboration's influence.

[1] a = Cronbach's Alpha

The used trust scale of Luo (2008) consists of eight items using a 7-point Likert scale. The Cronbach's alpha of all items was 0.88. The items of trust were also analysed by the principal component analysis in SPSS. After deleting the items that cross-load on the components, four items remained, being 1, 3, 5, 6 (a = 0.93). Though this Cronbach's alpha also exceeds the recommended value of 0.7 (Nunnally, 1978), it has improved after deleting the items that were discriminant valid as well.

Control variables

The age of the company was added as a control variable to check whether it met the requirement of 0-5 years of existence. In addition, the number of employees was added and a natural logarithm was included (LG10, SPSS). This lowered the Skewness and Kurtosis: Skewness decreased from 2.861 to 0.897, being <1.96, so the distribution can be considered symmetrical. Kurtosis lowered from 8.133 to 0.192, also meeting the requirement of <0.96; the Kurtosis of the number of employees can be viewed as a normal curvate (De Vocht, 2015).

Outliers

According to the case-wise diagnostics table for exploratory innovation (dependent) in SPSS, case 26 (mean = 3.67) should be eliminated, as its standard deviation -2.51 from the mean of the total population (mean = 6.07). Taking a closer look at this case, the following is extraordinary: it is the only case which reports they have an investment in direct equity, as equity at start and end of the collaboration was both 100%. Looking at company age and job title it fits the description perfectly. The case has been taken out of the correlation analysis and regression analysis.

Normal distribution –Skewness / Kurtosis

De Vocht (2015) mentions that both Skewness and Kurtosis should be below 1.96. All dependent, independent, and control variables meet these requirements.

Homoscedasticity

The points in the scatterplot for exploratory innovation show that these are not balanced divided among the 0-line, which means the model is not homoscedastic. The points are not randomly divided in the plot; however, they do not show a specific shape like a parabola either. Therefore, the assumption is that the regression is linear.

For exploitative innovation, the points are not balanced divided among the 0-line either, so also not homoscedastic. However, these points show that they are more random divided, which indicates a linear regression (De Vocht, 2015).

Results

Table 1, the correlation table, presents the correlations, means, and standard deviations per variable (descriptives). Included were the dependent variables (exploratory innovation and exploitative innovation) and the independent variables (equity at the end of the collaboration and trust), and finally the control variables (collaboration time, company age, and number of employees). Table 2 shows the results of the multiple regression analysis for exploratory and exploitative innovation. The independent variables were mean-centred to reduce multicollinearity (Aiken & West, 1991). The VIF was calculated for each dependent, independent, and Interaction variable of the regression. In model 1, 2, 4 and 5, the VIFs are below the rule of 10 (Neter, Wasserman, & Kutner, 1990). In model 3 and 6, the VIF values are too high for all values with equity in it, which can be explained as equity is part of the regression analysis four times (normal, squared, normal interaction with trust, and squared interaction with trust).

Models 1 and 4 contain the control variables. Models 2 and 5 contain the control variables and the independents. Additionally, models 3 and 6 introduce the interactions between trust and equity which enables the measurement of the moderating role of trust. Model 2 shows a positive significant relationship between equity (squared) and exploratory innovation ($\beta = 0.0003$, $p<0.05$). Hypothesis 1 is not supported as it shows a U-shape instead of an inverted U-shape. Regarding the effects of equity (squared) on exploitative innovation, model 5 shows a positive significant relationship as well ($\beta = 0.001$, $p<0.05$). Hypothesis 2 is thus supported neither, as it shows the opposite of what was expected. Whereas a positive relationship was expected between trust and exploratory innovation, model 2 shows a negative significant relationship, so hypothesis 3 is not supported either. However, in model 3, trust is positive and significant. Model 5 shows no significant relationship between trust and exploitative innovation, thereby not supporting hypothesis 4.

Table 1. Means, Standard Deviations, and Correlations

	Mean	St. Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Exploratory innovation	6,1505	0,78334	(0,74)						
(2) Exploitative innovation	5,129	1,55974	-0,13	(0,74)					
(3) Trust	4,6532	1,45441	-0,226	0,127	(0,93)				
(4) Equity end of collaboration	15,1935	32,01293	-0,209	0,047	0,05	-			
(5) Company age	2,9032	1,68037	-,546**	0,202	-0,137	0,325	-		
(6) Nr. of employees	34,65	65,903	-0,215	0,177	-0,103	0,296	,371*	-	
(7) Collaboration time (months)	18,3871	18,4638	-,578**	0,202	-0,104	0,307	,473**	0,02	-

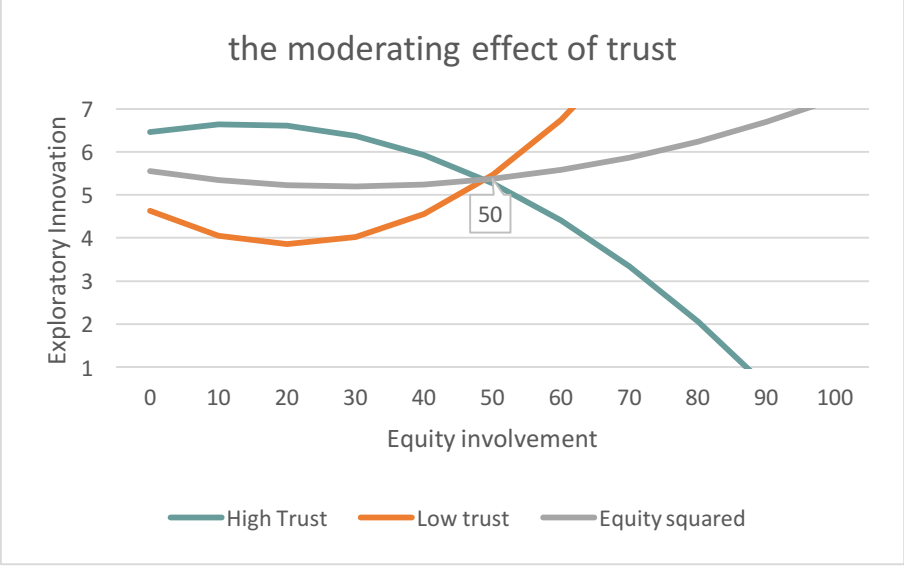
* p < 0,05; ** < 0,01; Cronbach's Alphas in parantheses

Table 2. Results of regression analysis: effects on Exploratory and Exploitative innovation

	Exploratory Innovation			Exploitative Innovation		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
(Constant)	6,09***	5,68***	5,55***	4,49***	3,00**	3,15**
	(0,25)	(0,32)	(0,26)	(0,64)	(0,87)	(0,90)
Company Age	-0,18	-0,13	-0,11	0,02	0,19	0,18
	(0,09)	(0,08)	(0,07)	(0,22)	(0,22)	(0,24)
Nr of employees	0,06	0,09	0,13	0,61	1,04	0,99
	(0,22)	(0,21)	(0,18)	(0,55)	(0,58)	(0,6)
Collaboration time	-0,02*	-0,02**	-0,02***	0,01	0,01	0,01
	(0,01)	(0,01)	(0,01)	(0,02)	(0,02)	(0,02)
Trust		-0,17*	0,63**		0,22	-0,61
		(0,07)	(0,21)		(0,19)	(0,73)
Equity end of collaboration		-0,02	-0,02**		-0,06*	-0,06
		(0,01)	(0,01)		(0,03)	(0,03)
Equity end of collaboration squared		0,00*	0,00**		0,00*	0,00
		(0,00)	(0,00)		(0)	(0)
Interaction effects						
Trust * Equity end of collaboration			0,04***			-0,04
			(0,01)			(0,03)
Trust * Equity end of collaboration squared			-0,00**			0,00
			(0,00)			(0,00)
R^2	0,43**	0,62***	0,77****	0,10	0,29	0,33
Delta R^2		0,19	0,16		0,19	0,04

* p < 0,05; ** < 0,01; *** < 0,001; **** < 0,0001; standard errors in parantheses

Figure 1: the moderating effect of trust



Model 6 shows a significant positive relationship (β = 0.0006, p<0.01) for the interaction of trust and equity (squared) on exploratory innovation. These effects are plotted in figure 1. When trust is high (+ 1 standard deviation), the exploratory innovation is higher and has an inverted U-shape. Although the shape is indeed an inverted U, hypothesis 5 is not supported as the shape of equity (squared) on exploratory innovation shows a U-shape instead of an inverted U-

shape. When trust is low (- 1 standard deviation), the exploratory innovation has a U-shape. In comparison to the equity squared line, the influence of trust shows a lower starting point in exploratory innovation when there is no to less equity involvement. However, when equity increases, the exploratory innovation grows faster than in the absence of the influence of low trust. It is interesting that the two lines cross each other at 50% equity, as this is the point where the alliance turns from a minority equity alliance into a majority equity alliance, also described as an acquisition. No support was found for the interaction between trust and equity on exploitative innovation.

Discussion and Conclusion

Although the literature on alliances often mentions that firms profit from knowledge share deriving from the collaboration as it will enhance their innovation (Ahuja & Katila, 2001; Powell et al., 1996), it is not specifically argued that the start-up profits from the knowledge share when it collaborates with corporates, resulting in an enhanced innovation. From a corporate point of view, the literature describes that corporates should collaborate with start-ups to enhance their innovativeness (Katila et al., 2008). In this specific literature about corporate and start-up collaborations, the reasons mentioned for a start-up and corporate collaboration are more about financial supplies and the scale which may enable quick growth (Katila et al., 2008).

The empirical data of this research show that, although significant relationships were found, no hypotheses were supported. The hypotheses were mainly derived from the expectation that a positive relationship with knowledge share would have a positive relationship with both exploratory and exploitative innovation as well. For exploitative innovation, only one significant relationship was found for equity, which, however, showed the opposite from what was expected. For exploratory innovation, all model coefficients were significant but also proved all the opposite from what was expected.

Although a significant curve (squared) and linear relation were found, the influence of equity involvement on the exploratory innovation as an inverted U-shape, is not supported by the survey results. The B coefficient is quite small but positive, which, thus, shows a U-shape instead of an inverted U-shape. The expectation was a bending in the curve around 50%, as it was argued that equity can enhance knowledge share, and, therefore, innovativeness when it is a minority equity alliance (Christensen, 2006). If the equity involvement goes up to 50%, also defined as acquisition, the innovativeness will, however, be influenced negatively (Öberg et al., 2011). As the sample size of this research was small, with an even smaller group having more than 0% equity involvement, no major conclusions regarding a relation can be supported. It needs further investigation with a larger sample group. In the literature on collaboration between start-ups and corporates, much has been written from a corporate angle. Collaborating with a start-up would enhance the corporate's innovation, as it would be more effective than their internal R&D output due to the start-up being more flexible, agile, open to

take risks, et cetera (Weiblen & Chesbrough, 2015). Reasons why a corporate is less successful in innovation are, for example, characteristics such as bureaucratic, less receptive to innovation, and higher levels of formalization, which lead to a lower capacity to innovate (Hurley & Hult, 1998). It can be explained from this knowledge that when a corporate has a major share in a start-up, the corporate could force the start-up to operate in a more formal way, which may explain the negative impact on the start-up's innovation.

Trust shows a negative relationship with exploratory innovation in model 2; however, it shows a positive relationship in model 3 (both significant). The latter supports the expected hypothesis, but it was expected that model 2 would show it as well. In literature, much has been written about the strong relationship between trust and knowledge share. In addition, the relationship between knowledge share and innovation is often supported. However, the relationship between trust and innovation is not often highlighted. Although this research is not very convincing about the actual effect of trust on innovation, it is a good start to point out the need for further investigation.

An interesting founding was the moderating effect of trust in equity (squared) on exploratory innovation. The hypothesis was not supported because the relation between equity and exploratory innovation shows a U-shape instead of an inverted U-shape, which also holds for the relationship of the interaction between trust and equity (squared). When looking at figure 1, the line of high trust shows an inverted U-shape, whereas low trust shows a U-shape. Both lines cross each other at around 50%, which may be interpreted as the moment the alliance changes from a minority equity alliance to a majority equity alliance. During the 0-50% equity share, it is visible that trust positively moderates the relationship between equity to exploratory innovation, but bends down when it goes towards a 50% equity involvement. Low trust shows the opposite. If the equity goes further up (during majority equity alliance), the exploratory innovation grows faster with low equity than it drops with high trust. It can be concluded that trust and equity are substitutes of each other instead of having the expected supplementary relationship in case of a start-up – corporate collaboration.

This research only found a significant relationship for the influence of equity on exploitative innovation, but the coefficient showed the opposite of what was expected. Therefore, no hypotheses was supported. Based on the literature study, the relationships were expected as described in previous chapters, although much literature was not specifically written in the context of start-ups collaborating with corporates, but more in a generic alliance context. The main findings of this research show the opposite of what was expected in literature; in literature, it was expected that acquisition negatively influences both innovation types. This research, however, it shows the opposite, which means that a majority equity alliance or acquisition enhances both exploratory and exploitative innovation in this context.

According to start-up-specific literature, start-ups are good at innovation due to ideas, willingness to take risks, agility, flexibility, et cetera (Weiblen & Chesbrough, 2015). Mapping these arguments to the two types of innovation, these characteristics have most in common with exploratory innovativeness, which requires loose cultures and less formal processes, whereas exploitative innovation requires efficiency, formal processes and refinement (Jansen et al., 2008), which has less in common with the characteristics of the start-up. Looking at the means of both scales, the start-ups scored 6.14 at exploratory innovation, whereas the exploitative innovation showed 5.13. It can thus be concluded that start-ups which are good at innovation, actually means that they are particularly good at *exploratory* innovation.

Not much research is done on the influence of this collaboration on the start-ups' innovativeness. This research points out that it is relevant to investigate this matter further. If a corporate wants to put money in a collaboration to enhance its innovation, would it not at least want to know whether this output would sustain during the collaboration? For the start-up, having an idea of what the influence can be to its most valuable resource, 'innovation', can support it in making the right choice of what collaboration type (with the right amount of equity involved) and what kind of relationship (how much trust in partner) it would go for.

Limitations and Future Research Directions

Limitations

Though the equity involvement was specifically asked from the start-up for the corporate they collaborated with, it is not said that there was not an equity involvement from another corporate or investor which could have influenced the outcome. The company age was calculated based on the year of foundation, where it would have been better to ask what the company age was at the end of the collaboration or at the time of the survey, if the collaboration was still active. The number of responses is low; therefore, the outcomes are less reliable. Most responses came from the Netherlands. To conclude on effects internationally, it would have been better if more responses came from other, different countries.

Future research

The literature shows that trust is an important factor in alliances, however, it is not often associated with innovation. It would be useful to conduct a study specifically on this relationship to find more evidence of the relation. In addition, literature on start-up and corporate collaborations does not often highlight the side of the start-up. This, however, could be interesting for both corporates and start-ups which plan to start such alliance or other type of collaboration.

As the sample was small, due to the difficult group to investigate, future research could, perhaps by using another method, find evidence for the theoretic model on the influences of equity and trust on exploratory and exploitative innovation. For example, via a case study

performed on a corporate level, future research can investigate the different collaboration types with start-ups and how they differ from each other regarding trust and equity.

References

De Vocht , A. (2015). *Basishandboek SPSS 23*. Utrecht, Nederland: Bijleveld Press.

Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, *23*(4), 660-679.

Gulati, R. (1998). Alliances and networks. *Strategic Management Journal*, *19*(4), 293-317.

Gulati, R., & Singh, H. (1998). The Architecture of Cooperation: Managing Coordination Costs and Appropriation Concerns in Strategic Alliances. *Administrative Science Quarterly*, *43*(4), 781-814.

Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic Networks. *Strategic Management Journal, 21*(3), 203-215.

Hansen, M. T., Podolny, J. M., & Pfeffer, J. (2001). So Many Ties, So Little Time: A Task Contingency Perspective on Corporate Social Capital in Organizations. *Social Capital of Organizations*, *18*, 21-57.

Henderson, R., & Cockburn, I. (1996). Scale, Scope, and Spillovers: The Determinants of Research Productivity in Drug Discovery. *The RAND Journal of Economics*, *27*(1), 32-59.

Hurley, R. F., & Hult, T. M. (1998). Innovation, Market Orientation, and Organizational Learning: An Integration and Emperical Examination. *Journal of Marketing*, *62*(3), 42-54.

Huston, L., & Sakkab, N. (2006). Connect and Develop: Inside Procter & Gamble's New Model for Innovation. *Harvard Busienss Review*, 1-9.

Inkpen, A. C., & Curral, S. C. (1997). International joint venture trust: an empirical examination. In B. W. Beamish & J. P. Killing (Red.), *Cooperative Strategies: North American Perspective* (pp. 308-335). San Francisco, CA: New Lexington Press.

Jansen, J. J. P., George, G., Van den Bosch, F. A., & Volberda, H. W. (2008). Senior Team Attributes Organizational Ambidexterity: The Moderating Role of Transformational Leadership. *Journal of Management Studies*, *45*(5), 982-1007.

Jansen, J. J.P., Van den Bosch, F. A., & Volberda, H. W. (2006). Exploratory Innovation, Exploitative Innovation, and Performance effects of organizational antecedents and environmental moderators. *Management Science, 52*(11), 1661-1674.

Katila, R., Rosenberger, J. D., & Eisenhardt, K. M. (2008). Swimming with Sharks: Technology Ventures, Defense Mechanisms and Corporate Relationships. *Administrative Science Quarterly, 53*(2), 295-332.

Kogut, B. (1988). Joint Ventures: Theoretical and Empirical Perspectives. *Strategic Management Journal*, *9*(4), 319-332.

Larson, A. (1992). Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. *Administrative Science Quaterly*, *37*(1), 76-104.

Li, L. (2005). The effects of trust and shared vision on inwards knowledge transfer in subsidiaries' intra- and inter-organizational relationships. *International Business Review, 14*(1), 77-95.

Luo, Y. (2008). Procedural Fairness and Interfirm Cooperation in Strategic Alliances. *Strategic Management Journal*, *29*(1), 27-46.

Madhok, A. (1995). Revisiting multinational firms' tolerance for joint ventures: A trust-based approach. *Journal of International Business Studies*, *26*(1), 117-137.

Marsden, P. V., & Campbell, K. E. (1984). Measuring Tie Strength. *Social Forces*, *63*(2), 482-501.

McEvily, B., Perrone, V., & Zaheer, A. (2003). Trust as an organizing principle. *Organization Science*, *14*(1), 91-103.

McFadyen, M. A., Semadeni, M., & Canella, A. A. (2009). Value of Strong Ties to Disconnected Others: Examining Knowledge Creation in Biomedicine. *Organization Science*, *20*(3), 552-564.

Mjoen, H., & Tallman, S. (1997). Control and performance in international joint ventures. *Organization Science*, *20*(2), 257-274.

Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, *58*(3), 20-38.

Mowery, D. C., Oxley, J. E., & Silverman, B. S. (1996). Strategic Alliances and Interfirm Knowledge Transfer. *Strategic Management Journal*, *17*(2), 77-91.

Murnighan, J. K. (1994). Game theory and organizational behaviour. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behaviour* (pp. 83-123), *16*(2).

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Acadamy of Management Review*, *23*(2), 473-490.

Neter, J. W., Wasserman, W., & Kutner, M. H. (1990). *Applied Linear Statistical Models.* Homewood, IL: Irwin.

Nunnally, J. C. (1978). Psychometric Theory. New York: McGraw.

Öberg, C., Grundström, C., & Jönsso, P. (2011). Acquisitions and network identity change. *European Journal of Marketing*, *45*(10), 1470-1500.

Park, S. H., & Ungson, G. R. (1997). The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. *Academy of Management Journal*, *40*(2), 270-307.

Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., . . . Wallace, A. M. (2005). Validating the Organizational Climate Measure: Links to Managerial Practices, Productivity. *Journal of Organizational Behaviour*, *26*(4), 379-408.

Pisano, G. P., Teece, D., & Russo, M. V. (1988). Joint ventures and collaborative agreements in the telecommunications equipment industry. Cambridge, MA: Ballinger Publishing Company.

Pisano, P., & Verganti, R. (2008). Which Kind of Collaboration Is Right for You? *Harvard Business Review*, *25*(4), 78-86.

Powell, W. W., Koput, K. W., & Smith-Doerr, L. (1996). Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology. *Administrative Science Quarterly*, *41*(1), 116-145.

Rindfleisch, A., & Moorman, C. (2001). The Acquisition and Utilization of Information in New Product Alliances: A Strength-of-Ties Perspective. *Journal of Marketing*, *65*(2), 1-18.

Rodriguez, A. L., & Wilson , D. T. (2000). Relationship bonding and trust as a foundation for commitment in US-Mexican strategic alliances: A structural equation modeling approach. *Journal of International Marketing*, *10*(4), 53-76.

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1988). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, *23*(3), 393-404.

Shan, W., Walker, G., & Kogut, B. (1994). Interfirm Cooperation and Startup Innovation in the Biotechnology Industry. *Strategic Management Journal*, *15*(5), 387-394.

Smith, K. G., Carrol, S. J., & Ashford, S. J. (1995). Intra- and interorganizational cooperation: Toward a research agenda. *38*(1), 7-23.

Stuart, T. E., Hoang, H., & Hybels, R. C. (1999). Interorganizational Endorsements and the Performance of Entrepreneurial Ventures. *Administrative Science Quarterly*, *44*(2), 315-349.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, *18*(7), 509-533.

Wadhwa, A., & Kotha, S. (2006). Knowledge Creation through External Venturing: Evidence from the Telecommunications Manufactureing Industry. *The Acedemy of Management Journal*, *49*(4), 819-835.

Weiblen, T., & Chesbrough, H. W. (2015). Engaging with Startups to Enhance Corporate Innovation. *California Management Review*, *59*(4), 66-90.

Wijk, R.A.J.L. van, Jansen, J. J. P., & Lyles, M. A. (2008). Inter- and Intra-Organizational Knowledge Transfer: A Meta-Analytic Review and Assessment of its Antecedents and Consequences. *Journal of Management Studies*, *45*(4), 830-853.

Winborg, J., & Landström, H. (2000). Financial Bootstrapping In Small Businesses: Examining Small Business Managers' Resource Acquisition Behaviors. *Journal of Business Venturing*, *16*(3), 235-254.

Zaheer, A., McEvily, B., & Perrone, V. (1998). Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organizational Science*, *9*(2), 141-159.

Appendices

A: top 10 most innovative countries in the world

[2] https://www.weforum.org/agenda/2016/08/these-are-the-world-s-most-innovative-economies/ (12-2-2017)

B: Communication about research - English

Dear … ,

Currently I am working on my thesis for my Partime Master Business Administration at the Rotterdam School of Management (Erasmus University Rotterdam). The main focus of the research is to investigate the effects of a collaboration with a corporate on the ***innovativeness of the startup***.

Hereby a short introduction of my research.

Goal:
This research focuses on the different ways of collaboration between start-ups and corporates and its effect on the innovativeness of the startup.

Why innovativeness?
Innovativeness is often seen as the core competence of a startup. A lot of research has been done about why it is useful for corporates to collaborate with start-ups to use their innovativeness. But what are the effects of the collaboration and what the ones on the innovativeness of the startup are not clear yet.

Relevance:
As innovativeness is often the reason for the collaboration to take place, it is useful for the corporate to know what the effects of the different kinds of collaboration are on this resource they value high. For the startup, who collaborates with the corporate often for its resources like finance, scale and power, it is useful to know how this collaboration will affect its most valuable resource: innovativeness.

Execution:
The research exists of surveys sent to start-ups who collaborate with corporates. The goal is to get a minimum response of 100 surveys, which enables to possibility to get a solid presentation of the effects. As this is quite a challenging target, your help is very much appreciated! Can you help me getting contacts of higher management/board members of the startup or alliance-/M&A-managers or startup coordinators of corporates, to get to the start-ups?

Please let me know if you are interested in the outcome of the research. Thank you very much for your help in advance, I am looking forward to your reply.

Kind regards,

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B: Communication about research - Dutch

Beste …,

Momenteel ben ik aan het afstuderen aan de Rotterdam School of Management (Erasmus Universtiteit Rotterdam) voor mijn Partime Master Business Administration. Mijn onderzoek richt zich op de innovativiteit van startups en daarbinnen focus ik me op de effecten van de samenwerking met corporates.

Hierbij een korte introductie van mijn onderzoek.

Het doel van mijn onderzoek is:
Inzicht krijgen in de invloed van een samenwerking met een corporate op de innovativiteit van de startup.

Waarom innovativiteit?
Innovativiteit wordt vaak gezien als de kerncompetentie van de startups. In de literatuur wordt veel geschreven over waarom het voor corporates aantrekkelijk is om met startups samen te werken, namelijk om gebruik te kunnen maken van hun innovativiteit. Echter is er nog weinig bekend over wat de effecten van deze samenwerking zijn op de innovativiteit van de startup.

Relevantie:
Het onderzoek zal inzicht gaan geven in welke vormen van samenwerking en hoe de duur van de samenwerking invloed hebben op de innovativiteit. Een relevant onderzoek, voor zowel corporates als startups die al samen werken of dat van plan zijn in de toekomst.

Uitvoering:
Mijn onderzoek zal bestaan uit enquêtes die ik naar startups - die samenwerken met corporates - wil sturen. Het doel is om minimaal 100 responses te krijgen om een gedegen uitspraak te kunnen doen over de effecten. Gezien deze uitdagende doelstelling kan ik jouw hulp goed gebruiken! Ik ben op zoek naar contactgegevens van directieleden en/of hoger management bij de startup en naar alliantie-/M&A-managers of startup coördinatoren bij corporates om zo via hun bij de startups te kunnen komen, kun je me hiermee helpen?

Mocht je interesse hebben in de uitkomsten van het onderzoek hoor ik het ook graag.
Alvast heel erg bedankt voor de moeite, ik zie je reactie graag tegemoet.

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B: Survey questions

Control variables – free format

1	what is the age of the company?
2	How long is the collaboration with the corporate? If it is ended, how long did it take?
3	How much equity involvement - in percentage - of the corporate in your business was there at the beginning of the collaboration?
4	How much equity involvement - in percentage - of the corporate in your business is there now, of was there at the end of the collaboration?
5	How much employees are there working at your company?
6	What is your position at the company?
7	What is the name of the corporate you collaborate with?
8	In what branche do you collaborate?

Innovation – 7 point scale

1	Our unit accepts demands that go beyond existing prod ucts and services.
2	We invent new products and services.
3	We experiment with new products and services in our local market.
4	We commercialize products and services that are com pletely new to our unit.
5	We frequently utilize new opportunities in new markets. Our unit regularly uses new distribution channels.
6	We regularly search for and approach new clients in new markets.**
7	We frequently refine the provision of existing products and services.
8	We regularly implement small adaptations to existing products and services.
9	We introduce improved, but existing products and ser vices for our local market.
10	We improve our provision's efficiency of products and services.
11	We increase economies of scales in existing markets. Our unit expands services for existing clients.
12	Lowering costs of internal processes is an important objective.**

Trust – 5 point scale

1	The partner firm in our alliance can be trusted to make sensible alliance decisions
2	The partner firm in our alliance is quite prepared to gain advantage by deceiving our party
3	Both parties in our alliance can rely on each other to abide by the alliance management agreement
4	Our party is reluctant to make resource commitment to the alliance when specifications in the alliance agreement are ambiguous
5	Both parties in our alliance have a high level of mutual trust in various activities
6	The partner firm always stands by its word even when this was not in the best interest for it
7	The partner firm never uses opportunities that arise to profit at our expense
8	The partner firm is flexible when our party cannot keep a specific promise stipulated in alliance

C: Branch representation Corporates and Startups

BRANCHES CORPORATE	NR.
TECH	3
TELECOM	3
AUTOMOTIVE	3
HEALTH CARE	3
MARITIEM	2
LEVERANCIER VAN BOUWSTOFFEN	1
CHEMICAL	1
MEDICAL SUPPLIES	1
EDUCATION	1
AQUARIUM INDUSTRY	1
FINANCE INDUSTRY	1
DE BRINK	1
LOGISTIEK	1
BANKAIR	1
PARKING	1
TRAVEL	1
CONSULTANCY	1
VERZEKERINGEN	1
VERLICHTING	1
HORECA	1
ZAKELIJKE DIENSTVERLENING	1
HOSPITALITY & LEISURE	1
IOT	1
TOTAL NR. OF BRANCHES	23

BRANCHES STARTUPS	NR.
HEALTH CARE	3
HOSPITALITY & LEISURE	3
MARITIME	2
AUTOMOTIVE	2
TELECOM	2
TECH	2
LOT	1
ENGINEERING	1
MATERIALEN	1
FOOD	1
DETAILHANDEL (ONLINE/ OFFLINE VERKOOP)	1
CO2 RE-CAPTURE INDUSTRY	1
EDUCATION	1
SOUND & VIBRATIONS	1
PARKEER EN VASTGOED	1
DEELECONOMIE	1
ZAKELIJKE DIENSTVERLENING	1
TRANSPORT	1
CROSSOVER	1
VASTGOED	1
VERZEKERINGEN	1
INNOVATIE SERVICES	1
IOT	1
LOGISTIC	1
TOTAL NR. OF BRANCHES	24

D: Represented Corporates

CORPORATE NAME	NR.
ACCENTURE	1
AHEM	1
ANWB	1
BAM	1
BMW	2
BOL.COM	1
DE BRINK	1
DHL, RANDSTAD, BRUNEL, KPN, ACHMEA, AKZO NOBEL, CMS	1
KIONDA	1
KPN	1
LEO STICHING GROEP	1
NATIONALE NEDERLANDEN	1
PACTUM	1
PARKMOBILE	1
PARTNER (TELECOM PARTIJ UIT ISRAËL)	1
PHILIPS	1
PIONEER	1
ROBECO	1
SIOUX	1
STENN LINE	1
T-MOBILE	1
THUISBEZORGD	1
TRANSMARE	1
VAN OORD	1
VERHAUSER	1
VERTROUWELIJK	2
VERTROUWELIJK (AMERIKAANS BEDRIJF)	1
TOTAL CORPORATES	27

E: Factor analysis and Cronbach's alpha

Rotated Component Matrix a

	Component		
	1	2	3
TR3	0,939		
TR6	0,928		
TR5	0,874		
TR1	0,86		
INN3		0,86	
INN4		0,841	
INN2		0,802	
INN13			0,901
INN10			0,875
Cronbach's Alpha	**0,926**	**0,789**	**0,744**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 4 iterations.