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## **Startups networking: how and when to act?**

### **Abstract**

Previous studies showed that despite of startups liabilities of newness and smallness, which make it more difficult to know how and when to act, they still have room for taking action in their relationships. These studies a single type of action at the time was investigated which limits our understanding of startups' use of alternative actions. In addition, these studies regarded the action of the startup an one-way, direct entity. Yet startups' actions needs to be expressed in interactive terms as actions taken by one organization in a relationship will require the support of its partner. Moreover, existing research into established firms showed that the decision to act in a particular way is influenced by both the willingness and ability to act. The rationale underlying a particular action is expected to be different for startups than for established firms because of their fundamentally different characteristics. Therefore, the questions addressed in this paper are: what is the range of actions from which a startup chooses in interaction with its partners and when does it choose a particular action? These questions are addressed by comparing different action typologies to develop a comprehensive research model. This research model goes beyond these typologies by including the rationale underlying the particular actions. Then, it is validated by investigating the interactions between a Dutch startup and its partners from both sides. In this way, the interactive nature of networking and the different perceptions of the startup and its partners can be captured. The findings show that (a) startups can and do choose from the complete spectrum – acquiescing, compromising, creating, avoiding, defying and manipulating – of actions available to them. Moreover, there are both similarities in the rationale underlying action of the startup and its partners. For example, the startup was especially more likely to acquiesce than its established partners when it was asymmetrically dependent on them, while the partners were more likely to compromise when there was mutual dependence. And a startup has to directly and actively involve the partners action and their underlying rationale in its decision to act in a particular as action always takes place in an interaction process.

## INTRODUCTION

In an interactive business landscape, the value of a resource is dependent on its connections to other resources and the outcome of an activity is interdependent with other activities. Consequently, an actor is dependent on the skills, resources, actions and intentions of other actors to create value for customers (Håkansson, Ford, Gadde, Snehota, & Waluszewski, 2009). This interdependence implies that the actions of organizations are interactive, evolutionary and responsive instead of independently developed and implemented (Håkansson & Ford, 2002). The IMP group defined interaction as “*a constant process of action and reaction involving activities, actors and resources*” (Håkansson et al., 2009, p. 197). Interaction may be unplanned and unintentional, but it is also the process through which actors try to achieve their aims. This conscious attempt to affect interaction is named ‘networking’. Networking can be interpreted as part of the interaction process through which an organization confronts aspects of the status quo with new evolving possibilities, whilst it conforms to other existing patterns within the network (Ford & Mouzas, 2008). In turn, these actions influence the extent to which its partners perceive the outcomes of the relationship as positive or negative (Håkansson & Ford, 2002; Håkansson et al., 2009; Ring & Van de Ven, 1994). Subsequently, this affects the partners’ willingness to take action to either support or counteract the outcome (Das & Teng, 2002; Håkansson et al., 2009; Ring & Van de Ven, 1994). Therefore, organizations need to know how and when to act to benefit from its partners’ resources and activities, “and most importantly, their initiatives and activities” (Håkansson & Ford, 2002, p. 138; Lui & Ngo, 2005).

Startups, companies that do not yet have established themselves in a network, have their unique challenges and experiences in networking. Their lack of experience, reputation and resources makes it more difficult to know how to act in a relationship and when action is needed (Ariño, Ragozzino, & Reuer, 2008). However, startups – just like any other organization – contribute their own resources and activities to a relationship. They are able to control, change and adapt these resources and activities. As a result, startups have room for taking action and making changes to reach their aims in interaction (Håkansson, Olsen, & Bakken, 2013). In other words, they still “*needs to act, to try to control, co-ordinate and influence, to suggest ideas and initiative, to set limits and to seek opportunities*” (Harrison, Holmen, & Pedersen, 2010, p. 948). Consequently, both inside and outside the IMP group there is an increasing interest in how startups interact. Inside the IMP group it was researched how startups initiate new relationships with customers in particular (La Rocca, Ford, & Snehota, 2013). Furthermore, the patterns of startups’ network development were studied (Aaboen, Dubois, & Lind, 2011, 2013). Outside the IMP group, there is increasing attention for the specific actions that startups take in their existing relationships. As successful interaction requires startups to know how and when to take action not only at the start of, but also throughout, a relationship (Lui & Ngo, 2005). For example, Thorgren, Wincent, and Boter (2012) demonstrated that small firms are more likely to acquiesce to group norms than large firms. And Ariño et al. (2008) found that entrepreneurial firms are more likely to avoid the problem of governance misalignment than large firms.

These previous studies researched a single type of action at a time. This limits our understanding of the range of alternative actions that startups can choose from (Tjemkes & Furrer, 2010). Organizations need to take different type of actions over time to achieve their aims. At one point in time, they may conform to the activities of their partner. For example, in order to retain the goodwill of a partner. While at another point in time, it is needs to confront some aspects of its relationship. For example, in order to create efficiency in activities and a development path for resources (Håkansson et al., 2009). In addition, the authors of previous research interpreted the action of the startup as a one-way, direct entity. However, the interactive nature of networking limits the freedom of choice of a single organization and the ability to change the counterparts with which it interacts (Ford & Mouzas, 2008). Partners need to be actively and directly involved, because all changes raised by one organization will require the support of at least one, but most likely several others (Ford & Mouzas, 2008; Harrison et al., 2010). Therefore, any attempt to identify startups’ actions needs to be expressed in interactive terms. Moreover, the choice of a particular action over another is not isolated (Ariño et al., 2008). It is influenced by both the willingness and the ability to act in a particular way (Oliver, 1991). Existing research that studies the rationale underlying a particular action is merely based on established

organizations (Corsaro, Ramos, Henneberg, & Naudé, 2011; Lui & Ngo, 2005; Tjemkes & Furrer, 2010). Yet the underlying rationale for taking a particular action can be expected to differ between startups and established organizations. As a result of the differences in their efforts to build legitimacy, the type and frequency of external demands, how much they dependent on the relationship and the goals of their organization (Thorgren et al., 2012). In the discussion, the findings of this research are compared to the theoretical framework developed in the next section.

In summary, existing research can be complemented by identifying the range of different actions a startup can choose from to interact. In addition, existing research can be extended by exploring the rationale that underlies the choice of a particular action. Therefore, we address the following research questions in this paper: what is the range of actions from which a startup chooses in interaction with its partners and when does it choose a particular action? These questions are addressed in a case study of a Dutch startup that is collaborating with several organizations to develop a new medical device for the treatment of diabetes. Data was collected from both the startup and its partners to capture the interactive nature of networking. The paper proceeds with establishing a theoretical framework based on relevant literature that exists to date. In the methodology section a brief description is provided of the research design. This is followed by a detailed description of the evolution in the startup's relationships. Drawing from the case analysis the startup's actions are identified and their underlying rationale is explored. In addition, the startup's actions and their rationale are compared to the actions & their rationale of its partners and the existing literature.

## **THEORETICAL FRAMEWORK**

Interaction in an existing relationship can be considered as a series of 'episodes' within a more or less continuous interaction process. Most interaction episodes will be perceived as a repetitive sequence of 'normal' interactions, as long as two actors comply to their formal and informal agreements (Håkansson et al., 2009; Lui & Ngo, 2005). For a startup and its partners these interactions are part of everyday life; a normal flow of orders, payments and deliveries (Håkansson et al., 2009). In this situation, the relationship between the startup and its partner is relatively stable because they achieved a steady state of interdependence or they are not willing to invest resources to change the relationship (Ford & Mouzas, 2008). However, during the relationship either of the startup or its partner may seek to change some significant aspect of that relationship. The initiative to change is often triggered by either ideas or events external to the relationship (Harrison et al., 2010; Lui & Ngo, 2005) or some form of relationship assessment on the specific relationship (Ford & Mouzas, 2008). As a consequence, the formal and informal agreements of the relationship frequently have to be renegotiated. During these renegotiations, both partners take actions towards making a new supplemental agreement. These interactions can either positively or negatively impact both partners as well as the outcome of the relationship (Edvardsson, Holmlund, & Strandvik, 2008; Elo & Törnroos, 2005; Håkansson & Ford, 2002; Håkansson et al., 2009). Interactions with a 'converting' character stimulate further development of activity links, resources ties and actor bonds. In contrast, actions with a 'inhibiting' character limit the progress of the relationship (Edvardsson et al., 2008; Elo & Törnroos, 2005). In addition, the initiative to change an existing relationship can have effects to the network. For example, the newness provided in the relationship may benefit other actors; the norms of conduct may change which will affect other actors' behavior; and it may send the message that the partners are trying to change their network position (Ford & Mouzas, 2008; Håkansson et al., 2009). As the action taken during a renegotiation process will broaden or narrow the options for future development, a startup will frequently have to consider its actions when it seeks to change an aspect of an existing relationship (Ford & Mouzas, 2008). Håkansson et al. (2009), Lui and Ngo (2005) and Tjemkes and Furrer (2010) developed typologies of actions that organizations take in existing relationships. These typologies are based on research into the relationships between established organizations. Yet recent studies have found that single actions of these typologies also apply to startups (Ariño et al., 2008; Thorgren et al., 2012). Next, these typologies are further explained and compared to identify the possible range of actions that startups can take in existing relationships.

### **Type of actions startups can choose in interaction with their partners**

According to IMP, in specific the typology of Håkansson et al. (2009), organizations can choose from two types of actions regarding the substance of existing relationships; they can either confront or conform. By confronting an organization seeks specific changes in the resources and activities of its existing relationships, whereas by conforming they keep the status quo in the substance of its relationship. Furthermore, organizations can choose how they would like to interact with their partner; they can either coerce or concede. By coercing they try to direct specific aspects of interaction in accordance with their own intent, while by conceding they follow the wishes of their partner. In addition, the authors identify two more actions: consolidate and create. However, these actions relate to the development and maintenance of the network position. As the level of analysis of this paper is on the existing relationship, these actions are not considered here. At first sight, these two dichotomies seem to be closely interlinked; when an organization seeks specific changes in the substance of the relationship it will direct the interaction in accordance with its own wishes. In contrast, when an organization wants to maintain the status quo it will conform to the intent of its partner. However, the typologies developed by Lui and Ngo (2005) and Tjemkes and Furrer (2010) reveal that this is not necessarily the case.

In the strategic management literature, Lui and Ngo (2005) and Tjemkes and Furrer (2010) developed alternative typologies of action in an existing relationship. Although the authors used different terms to name their actions, their nature closely overlaps. When these typologies are combined six actions can be distinguished: acquiesce, compromise, create, avoid, defy and manipulate. *Acquiesce* involves the compliance of an organization to the action of its partner even at the expense of its own short-term interests. Organizations do this either out of habit, or to strategically enhance the relationship (Lui & Ngo, 2005). *Compromise* refers to the partial compliance of an organization to its partner's action and its negotiation with its partner to seek concession (Lui & Ngo, 2005). An organization and its partner cooperatively renegotiate the relationship's agreements in a relationship-preserving manner (Tjemkes & Furrer, 2010). *Create* regards the creation of novel and potentially useful solutions by an organization and its partner. An organization and its partner try to find innovative solutions, beyond the scope of their initial agreement, to align their interests and preserve the relationship (Tjemkes & Furrer, 2010). *Avoid* involves an organization not intending to react to its partner's action and conceal this non-cooperation. For this purpose, an organization reduces the contact with its partner, delays its response and hopes that the issue will resolve by itself (Lui & Ngo, 2005; Tjemkes & Furrer, 2010). *Defy* consists of challenging a partner's action through rejecting and denouncing the relationship (Lui & Ngo, 2005). An organization can either spent little effort to maintain the relationship allowing it to deteriorate or it can terminate the relationship instantly (Tjemkes & Furrer, 2010). *Manipulate* involves the persistent efforts of an organization to take action regardless of the ideas and preferences of its partner (Tjemkes & Furrer, 2010). The aim is to shape and redefine the actions of its partner by overpowering it (Lui & Ngo, 2005).

It becomes clear from the explanation of these six actions that respectively conforming & conceding and confronting & coercing not always go hand in hand. This is captured by the matrix in Table 1 that classifies the specific actions of (Tjemkes & Furrer, 2010) and (Lui & Ngo, 2005) according to the substance of interaction and the nature of interaction (Håkansson et al., 2009) on the axes. Indeed, when organizations acquiesce to their partners, they follow the wishes of their partners to keep the status quo in the activities and resources. And organizations defying or manipulating seek to change substance of their relationship according to their own intent. Yet, organizations avoiding their partner seek to keep the status quo against the wishes of their partner. So, an organization coerces its partner in the direction of conforming to their existing relationship. And when organizations compromise or create, they try to change specific aspects of the relationships while taking into account their partner's wishes besides their own. Thus, an organization has a conceding way of interaction while it confronts the substance of its relationship. In conclusion, we expect that – based on the research into established organizations – startups can choose between acquiescing, compromising, creating, avoiding, defying and manipulating actions in their existing relationships. These actions involve either conforming or confronting the substance of interaction, while at the same time they refer to the conceding or coercing nature of interaction.

		Substance of interaction	
		<i>Conform</i>	<i>Confront</i>
Nature of interaction	<i>Concede</i>	Acquiesce	Compromise Create
	<i>Coerce</i>	Avoid	Defy Manipulate

**Table 1.** Matrix of type of actions according to nature and substance of interaction

### **Rationale that underlies the startup's choice of a particular action**

The rationale underlying a startup's choice for a particular action includes both its willingness and its ability to act in a certain way (Håkansson & Ford, 2002; Oliver, 1991). According to the IMP group this willingness and ability to act of an organization in a relationship is dependent on a) on what has happened in the past of the relationship, b) on what currently happens between it and its partners and c) on what it expects to happen in the future interaction (Ford & Mouzas, 2008; Håkansson & Ford, 2002; Håkansson et al., 2009; Medlin, 2004). In the strategic alliance literature it is argued that this choice is influenced by the reason why these actions are taken (cause), who takes them (initiator), what the relation is between the initiator and the actor (relationship), what these actions include (substance), how these actions are executed (control) and in which context these actions are executed (context) (Oliver, 1991; Tjemkes & Furrer, 2010). Although this literature has a strong focus on planning and control, these rationales do not have to be applied teleological. The rationale of action can be constructed in retrospect by an organization when the interaction already took place. Furthermore, the rationales have clear aspects of past, present and future in them as explained in the remainder of this section.

#### *The cause of action*

The cause of action refers to the set of expectations regarding the future outcomes that underlie the action. A particular action can either positively or negatively influence the economic and social outcomes of the relationship (Håkansson et al., 2009; Oliver, 1991). Firstly, partners in an relationship are motivated to seek *efficiency* or economic outcomes (Ring & Van de Ven, 1994). If efficiency conditions are met, the perceived value from the relationship to each partner must be greater than zero, and greater than the perceived value from any alternative agreement that achieves the same purpose (Ariño & de la Torre, 1998). When an organization perceives the economic outcome as negative it will try to counteract the outcome, whereas when it is perceived as positive it will act supportively (Beckert, 1999; Håkansson et al., 2009). Secondly, the need for *legitimacy* or social outcomes influences the choice of a specific action (Beckert, 1999; Oliver, 1991). Any 'management of legitimacy' (Suchman, 1995) has to take into account the negative consequences from counteracting the partner. An organization may support its partner's actions even if it sees them as preventing more efficient outcomes when counteracting may lead to irrational or unpredictable reactions of its partner (Beckert, 1999). Moreover, counteracting the demands of the partner may "*signal a lack of social competence, such that the firm's other behaviours cannot be trusted*" (Thorgren et al., 2012, p. 456).

#### *The initiators of action*

The initiators of action involves the current characteristics of the organization that initiates the change as perceived by its partner (Oliver, 1991). Three partner characteristics influence the type of action taken by a startup: multiplicity, trust and similarity & complementarity (Beckert, 1999; Lui & Ngo, 2005; Oliver, 1991; Ring & Van de Ven, 1994). Firstly, an organization is often confronted by *multiplicity* of demands by either the same partner or different partners which makes unilateral action difficult. The support of one wish of a partner often requires counteracting the wishes of other partners (Oliver, 1991; Pfeffer & Salancik, 1978). Moreover an organization it can allocate fewer resources to managing each situation as often it has to deal with several interactions at the same time (Corsaro et al., 2011; Holmen & Pedersen, 2003). In addition, relationships are connected to each other.

Consequently, what happens in one relationship will affect other relationships positively or negatively (Håkansson & Ford, 2002). Secondly, inter-organizational *trust* is likely to result in conceding actions. Trust facilitates a tacit and close relationship in which partners are more willing to act beyond the duties described in the formal contract (Macaulay, 1963). Furthermore, trust extends the interaction time frame which minimizes destructive conflicts (Axelrod, 1984; Heide & Miner, 1992). Moreover, working with a reputable partner would encourage more supportive actions (Lui & Ngo, 2005), because it provides information about its trustworthiness (Barney & Hansen, 1994; Blois, 1999). Lastly, *similarity* refers to the extent to which the culture and processes of partners are similar (Saxton, 1997; Westney, 1988). In contrast, *complementarity* refers to the extent to which the partners possess activities and resources that are different, but complement each to create technical or economic outcomes (Raesfeld, Geurts, & Jansen, 2012; Raesfeld, Geurts, Jansen, Boshuizen, & Luttge, 2012; Wilkinson & Young, 2002) Organizations that are similar may find it easier to communicate, because they will approach problems in a similar way and often research similar decisions. Therefore, similar partners are more likely to support to each other's actions than complementary partners (Lui & Ngo, 2005).

#### *The relationship between the initiator and the actor*

The relationship between the initiator and actor refers to the past and current characteristics of the relationship between them, such as dependency and relationship-specific investments. An organization is more likely to support the action of partners with which it currently has an *asymmetric dependence* relationship (Corsaro et al., 2011; DiMaggio & Powell, 1983; Ford & Mouzas, 2008; Oliver, 1991). In an asymmetric dependence the relationship, the availability of attractive alternatives provides one organization with a source of power, while the other partner's lack of alternatives increases its dependence on that organization (Emerson, 1962). As a result, the asymmetries in dependence will affect the direction to be followed on the basis of who needs who the most (Ford & Mouzas, 2008). Furthermore, organizations are more likely to support the action of a partner, if *relationship-specific investments* were made in the past of the relationship (Lui & Ngo, 2005; Tjemkes & Furrer, 2010). Relationship-specific investments refer to the non-recoverable and idiosyncratic investments that organizations make in a relationship (Parkhe, 1993). These investments cannot be redeployed easily to another relationship without the costs of adapting them to a new partner (Klein, Crawford, & Alchian, 1978). The higher the investments in a relationship the more important it is to an organization, but the more it will also restrict the freedom of the organization to change (Håkansson & Ford, 2002). Thus, relationship-specific investments act as exit barriers and create a lock-in effect for partners (Anderson, Håkansson, & Johanson, 1994). This provides a strong incentive to act supportively (Dyer, 1997; Wathne & Heide, 2000).

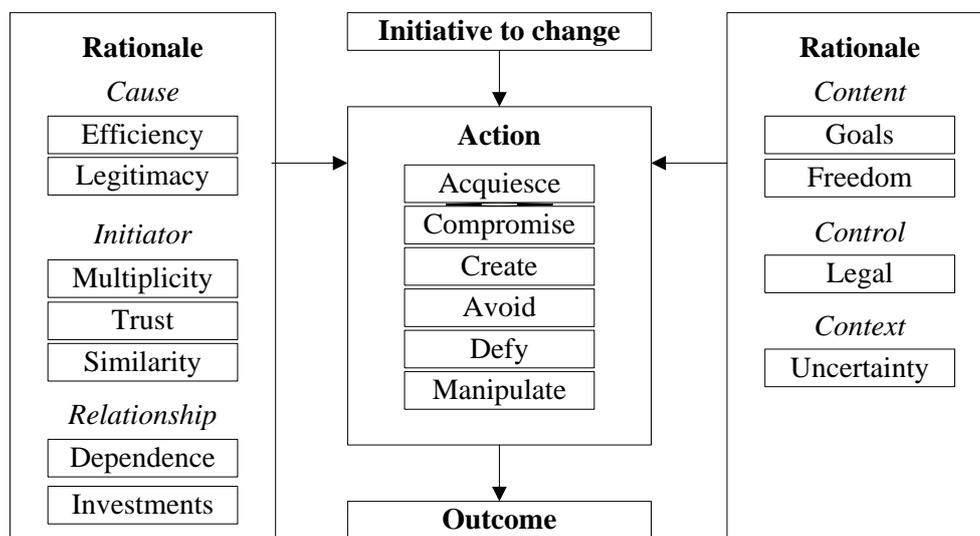
#### *The substance of action*

Two dimensions of action content are important in predicting the use of alternative actions: the consistency of the actions with an organization's current network of activities and resources (Håkansson et al., 2009), and the loss of decision making freedom that the actions will impose on the organization in the future (Oliver, 1991). An organization will be less willing to support the wishes or expectations of its partners when these actions are incompatible with its own internal goals. However, an organization often has flexibility in determining its activities and resources to a certain extent (Freel, 2000; Håkansson et al., 2013; Nieto & Santamaría, 2010; Nooteboom, 1994). As a consequence, it may have less reason to actually counteract the actions of its partners (Thorgren et al., 2012). Yet an organization may lack the ability to support when consistency is low, e.g. it has insufficient resources to align its activities with the activities of its partners. Thus, both the willingness and ability of an organization to act is dependent on the consistency with its current network of activities and resources (Oliver, 1991). In addition, an organizations motive to retain control over its resources and activities will impose limits on their willingness to support (Oliver, 1991; Pfeffer & Salancik, 1978). Therefore, an organization is expected to support more readily to pressures that do not limit its future decision-making freedom (Oliver, 1991).

### *The control over and context of action*

The control of action describes the means by which action is executed by an organization or its partner. Organizations try to control their partners to achieve their own aims (Håkansson et al., 2009). Especially, legal control provides a strong rationale of an organizational action (Oliver, 1991). As some aspects of the relationship may have legal standing that extends across industries and countries, such as property rights and accounting standards. Other aspects may have quasi-legal statute, such as codes of conducts and industry standards (Ford & Mouzas, 2008). When the force of law exists, organizations less likely to act counteractive, because the consequences of noncompliance are often highly punitive and strictly enforced (Oliver, 1991). However, the more an organization achieves its ambition of control, the less effective and innovative its surrounding network will be (Håkansson et al., 2009). Also, the action context is likely to be a determinant of an organization's action. Specifically, environmental uncertainty is predicted to affect an organization's conformity to or confrontation of partner's actions. Managers have a strong preference for certainty, stability and predictability in organizational life (Beckert, 1999; DiMaggio & Powell, 1983; Pfeffer & Salancik, 1978). Therefore, an organization will exert greater effort to re-establish an illusion or reality of certainty, stability, and control when environmental uncertainty is high. As the uncertainty in the environment decreases, an organization grows more confident in their predictions about the acquisition of future resources and legitimacy. In this situation, confronting its partners' demands are seen as a less risky alternatives for reaching organizational goals (Beckert, 1999; Oliver, 1991).

In summary, we expected – based on the research into established organizations – that the choice for a particular action is influenced by the cause of the action, the initiator of the action, the relationship between initiator and actor, the content of the action, the control mechanisms used to execute the action and the context in which the action is executed. In turn, the choice for a particular action can have either a positive or negative effect on the outcomes of the relationship. The relation between actions, rationale and outcomes is schematically shown in Figure 1.



**Figure 1.** The theoretical framework of startup's action and its underlying rationale

## **METHODOLOGY**

### **Subject of study**

The empirical data collection involved an in-depth case study of a startup and its partners in the medical device business. The startup is developing a solution to improve the treatment of diabetes type 1 patients: a closed-loop bi-hormonal artificial pancreas. This breakthrough in diabetes management includes the automated administration of insulin and glucagon while the glucose level of the patient is continuously monitored. For diabetes patients maintaining glucose levels in the normal range is

essential for preventing diabetes related complications which include blindness, heart and cerebral infraction, foot ulcer and amputations. Consequently, the portable bi-hormonal artificial pancreas has the potential to improve the quality of life of patients with diabetes and decrease the financial burden for society. The principle is innovative, because it includes automatic administration of both hormones while existing diabetes treatments still require manual administration. In addition, it uses glucagon as a means to control the glucose level of the patient instead of only using it as a last resort. Moreover, the startup was able to integrate all the components into a single device while other research groups still use separate devices to administrate the hormones and to measure glucose levels. Developing all the required resources in-house, such as research & development, production and distribution, is beyond the scope of the startup. Therefore, it needs to collaborate with a wide range of partners to develop, produce and market the artificial pancreas. In specific, the startup has a key relationship with: a *teaching hospital* to carry out clinical trials with the artificial pancreas; a *health foundation* to create awareness among patients, diabetes nurses and physicians; a *glucagon company* to develop a new type of glucagon suitable for the artificial pancreas; a *research institute* to develop new type of sensor that more accurately measures blood glucose levels; and a *market leader* in the diabetes device market to facilitate the marketing, sale and distribution of the artificial pancreas as soon as it is market ready. Moreover, it is involved in a European funded project with six organizations – besides the startup – from five different countries: teaching hospital (NL), technical university (NL), medical university (AT), established industry player (DK), clinical research institute (DE) and software company (TR). The project has the goal to advance the development of the artificial pancreas to be able to bring it to the homes of patients as quickly as possible. It would not have been possible for the startup to develop a new treatment for diabetes without the support of these partners due to a lack of knowledge and resources.

### Data collection

A retrospective analysis is conducted from the start of the project in 2004 up to point of entry into the ongoing situation in April 2013. Thereafter the startup is followed in real time until the end of December 2014. The combination of the retrospective analysis with real time longitudinal research allows detection of substantial changes in relationships over large windows of time and capturing the ongoing development of relationships as they emerge (Bizzi & Langley, 2012; Leonard-Barton, 1990). We based our analysis on empirical data collection from three different sources: semi-structured interviews, observations and archival documents. On the one hand, to be able to capture the full complexity of the interaction in the relationship between the startup and its partners (Bizzi & Langley, 2012). On the other hand, to eliminate the risk that a finding is found by chance alone, which is crucial since this study is based on a single case (Doorewaard & Verschuren, 2010; Gibbert, Ruigrok, & Wicki, 2008). Firstly, direct passive and active participant observations are carried out during one of the researcher’s stay at the startup from April 2013 until December 2014 on average two days a week. Observations were carried out to discover the discrepancies between what participants say they do and what they actually do. To reduce the researcher’s hindsight bias every once a week a short evaluation report was written based on the field notes taken during that week. Secondly, archival documents, such as non-disclosure agreements, project descriptions, patents, are used to minimize interviewee hindsight bias and limitations of memory recall. This resulted in an additional data set of over 400 pages of text. In table 2 an overview can be found of these secondary data sources.

Internal data	External data
112 pages of interviews	21 articles about the innovation project
72 pages of project description	15 web pages of partners
31 pages of observation diary	
185 pages of presentations and reports	
2 contracts	

**Table 2.** Secondary data sources

Lastly, fifteen semi-structured interviews were held with key individuals from the startup and its respective partners at two moments in time as shown in Table 3. Although collecting data on both sides of the relationship on two moments in time is challenging, it allows us to capture the interactive nature of networking or, in other words, the pattern of action of reaction between the startup and its partners over time. Moreover, the different perceptions of actions & reactions, their underlying rationale and outcomes can be considered (Ariño et al., 2008). This complements existing cross-sectional research that collected data from a single organization per relationship (Ariño et al., 2008; Lui & Ngo, 2005; Thorgren et al., 2012). The selection of interviewees was based on (1) direct interaction with the other partner(s) in the relationship and (2) the direct involvement into the development of the startup's artificial pancreas. The first set of interviews was held in June and July 2013, while the second set followed about one and a half years later in December 2014. The interviews lasted approximately between the 30 and 100 minutes. The first set of interviews were structured around how and why the startup and its partner initiated the relationship; what the goals of the relationship are and how the startup and its partner ensured that these goals were achieved; and how resources were exchanged between the startup and its partner. Then the interviewee was asked to identify important changes in the relationship, how the startup and its partners acted during these changes, why they acted the way they did and how this affected their relationship. The second set of interviews focused on how the relationship startup and its partner has evolved since the first interview; if and how the goals of the relationship changed; if and how the startup and its partner ensured that these goals were achieved changed; and if and how resource exchange between the startup and its partner changed. Then the interviewee was asked to identify important changes in the relationship, how the startup and its partners acted during these changes, why they acted the way they did and how this affected their relationship. However, the interviews were flexible enough to leave room discussion and enable interviewees to give examples and expand on important events and situations. The interviews involved sensitive, confidential, and political topics regarding the relationship with the startup. Consequently, it was important to maintain confidentiality. Therefore, the names of case organizations and interviewees were made anonymous. All interviews in this research were tape-recorded and transcribed.

<b>Interviews</b>			
<i>Organization</i>	<i>Interviewee</i>	<i>Date</i>	<i>Length</i>
Teaching hospital	PhD student	2-7-2013	29 min.
Startup	PhD student	21-6-2013	34 min.
Startup	Entrepreneur	20-6-2013	101 min.
		1-12-2014	102 min.
Startup	Informal investor	28-7-2013	54 min.
		17-12-2014	85 min.
Health fund	Head knowledge	3-7-2013	28 min.
		3-12-2014	34 min.
Teaching hospital	Project leader	2-7-2013	32 min.
		2-12-2014	50 min.
Technical university	Director	24-7-2013	55 min.
Medical university	Researcher	11-2-2013	55 min.
Market leader	Head business	28-7-2013	51 min.
		3-12-2014	41 min.
Research institute	Manager SME	25-7-2013	42 min.

**Table 3.** Interviews that were conducted

### **Data analysis**

To analyze the recorded interviews, diary and archival documents, ATLAS.ti software was employed. The software supports qualitative researchers in systematically analyzing complex phenomena in unstructured data, such as text, audio and video. ATLAS.ti provided us the tools to

code the findings our data; to evaluate the importance of these findings; and visualize the complex relations between these findings. The coding was based on the theoretical framework developed in the previous section that specified important concepts a priori. This helps to improve the research quality as it allows us to measure concepts more accurately (Eisenhardt, 1989). It important to note that concepts are tentative in this type of study. The concepts can either be validated or found to be inadequate in the context of startups. If the concepts are confirmed, then the researcher has a firmer empirical grounding for emergent theory. If the concepts are found to be inadequate, they can further refine emergent theory based on the case study findings (Eisenhardt, 1989; Gibbert et al., 2008).

We analyzed the data in six consecutive phases, which are summarized in Table 4. We started by drawing up a history of the startup to clarify the context of the phenomena in question. In the second phase, we coded the data in order to identify and categorize the actions and reactions of the startup and its partners. We used the six actions adopted from Tjemkes and Furrer (2010) and Lui and Ngo (2005) as the coding template. Then our analysis focused on the time line and sequences of interaction; we tried to pinpoint when certain actions and reactions took place in time. The aim of the fourth phase was to code the data to identify and categorize the rationale underlying the actions and reactions of the startup and its partners. For this purpose, we used the classification of the willingness and ability to act (cause, initiator, relationship, control, and context) presented earlier as coding frame. The knowledge gained from the second until the fourth phase enabled used to develop simple box arrow diagrams how actions seemed to be linked with the willingness and ability to act. Finally, we focused our attention to how the linkages in the previous phase affected the outcome of relationship either positively or negatively. The results of this analysis are schematically presented in table 3, and elaborated in the next part of this article.

Phase	Analytical goal	Analytical process used and outcome	Implications for conceptual development
1	Describe the evolution of the startup and its relationships	Producing a time line of the evolution of the startup	Understanding the context of interaction between startup and its partners
2	Identify the different types of actions and reactions	Coding of different type of actions and reactions according to theoretical framework	Operationalization and illustration of different type of actions by startup in interaction with partners
3	Build time line of interactions	Arranging the identified interactions on time lines	Interaction develops over time
4	Uncover the rationale of the different type of actions	Coding of rationalities according to the theoretical framework	Operationalization and illustration of different type of rationalities by startup in interaction with partners
5	Reveal the linkages between action and rationale	Inductive coding and visualization of the linkages between the rationale of startup and its partners	Rationalities are linked to different types of actions and differ between startup and its partners
6	Examine the outcome of the linkage between action and rationale	Categorize of the identified linkages	The linkage between rationale and action results in either converting or inhibiting effect on the relationship

**Table 4.** Phases of case analysis

## RESULTS

### The development of the startup

In 2003, an entrepreneur – a diabetic patient – consulted his diabetes nurse for his annual checkup. Over the years, he had become increasingly dissatisfied with the available treatment methods for his disease. That evening he invented the working principle of a new system: a bi-hormonal artificial pancreas. Yet the entrepreneur lacked the necessary knowledge to develop the system on its own. Therefore, he mobilized the support of two friends: a diabetes nurse and a software developer. In 2004, they were able to try out a first prototype of their system, with the size of a small closet, on the entrepreneur. When it turned out to work properly, the entrepreneur tested the system on few more diabetics. The results were promising, and the friends started the development of a prototype with the

size of a microwave. In this period, the entrepreneur also made important decisions about which parts of the device to patent and which parts to keep secret. Nevertheless, the progress stagnated between 2005 and 2008 because of two main reasons. Firstly, the previous prototype was developed out of pocket by the three friends. However, these funds were insufficient to finance the development of a second prototype. In 2008, this problem was resolved. The entrepreneur found the husband of a befriended couple – an angel investor – prepared to invest financial resources. To make this investment possible, a new company was founded in 2008; the startup. Secondly, the startup lacked a partner to run official clinical trials. Eventually, in 2008, the startup came into contact with the head of a teaching hospital's diabetology group. By the end of 2011, two clinical trials were run by this teaching hospital. In this period, the startup also came into contact with the health foundation for diabetes. This foundation appeared to have a large network of research institutes, universities, companies and non-profit organizations that were involved in diabetes related research. For example, it brought the startup into contact with the research institute. The startup and the research had mutual interest to develop a new glucose sensor together. Around the same time, the startup began to develop a third, smaller prototype with improved functionalities. The startup built a third prototype of the artificial pancreas with approximately the size of a laptop. As a consequence the startup and the teaching hospital were able to try out the system in a home-situation. Before the artificial pancreas could only be tested in a hospital setting as it was too big to wear. The results of a two day trial – in a home-situation – showed that the device performed as well as the regular diabetes treatment on day one and better on day two.

These promising results gave the startup motive to take the project to a next level. Firstly, the startup and the teaching hospital applied and were granted funding from the European Commission under the Seventh Framework Programme for Research and Technological Development in 2012. The funding allowed the startup to build a fourth, even smaller, prototype of the artificial pancreas that would be suitable to introduce in the market. In addition, the project would cover the cost of three additional clinical trials. Secondly, the development of the artificial pancreas was given a boost when the startup won the audience award of the health foundation in 2012. This award generated a lot of media attention. In this way, the project was picked up by a market leader in the diabetes device market. First the market leader was just cooperating to keep track of the startup's invention, but after promising results of the test with the artificial pancreas they wanted to intensify the relationship. However, the development of the startup's artificial pancreas did not only run smoothly after 2012. The startup and the health foundation applied for funding from the Dutch government, but this grant was rejected. Additionally, the startup had an issue with the research institute because the institute desired to change the agreements of the relationship while the startup did not. Moreover, there was a conflict with the software company in the European project about the quality of the work that was delivered by the company. Also, one partner decided to leave the European project after one-and-a-half years. In conclusion, the startup interacted with an increasingly number of partners over the years. Consequently, there were more and more relationships that the startup had to interact in. In some instances this had a positive effect, but in others it harmed the development of the artificial pancreas.

### **The startup interacting with its partners**

In this section the interaction between the startup and its key partners as well as their underlying rationale for actin are explained in detail. The results are summarized in table 5 per partner in chronological order and will also be explained in this way.

#### *Teaching hospital*

In 2008, a physician had read an article about the startup's artificial pancreas in magazine about diabetes. Although he was enthusiastic about the device, he did not have the necessary skills and facilities to conduct clinical trials. Therefore, he referred the startup to the head of the diabetology group of the teaching hospital. After some initial meetings to get to know each other, the startup proposed that the teaching hospital would run clinical trials in exchange for shares in the startup. The teaching hospital agreed to the type of arrangement, but wanted to cooperatively negotiate about the exact amount of shares in exchange a certain amount of work. The teaching hospital believed that the future success of the startup's invention was still highly uncertain, because it was still just an 'idea'.

However, it had sufficient trust in the capabilities of the startup and the initial results achieved with the artificial pancreas that the startup's 'idea' could be tested in clinical trials. In addition, the research institute perceived that there was mutual dependence between them. As the head of the group explains, "we [teaching hospital] *do not have technical engineers that can develop diabetes technology in-house. However, we [teaching hospital] have access to patients and clinical expertise.*" The startup was willing to compromise on this issue, because it was even more dependent on the teaching hospital. The teaching appeared to be the only one with necessary expertise to test medical devices in the country, and demonstrating the performance of the artificial pancreas in official trials was essential at that time. On the one hand to gain the legitimacy in the current financial, diabetes and technical network to attract additional resources from other organizations, such as funding from investors or support from diabetes patient foundations. On the other hand, the startup needed directions on how to improve the artificial pancreas to develop a device that actually can be used by diabetes patients in a home situation.

In 2011, the teaching hospital came across a relevant grant for funding under the Seventh Framework Programme for Research and Technological Development from the European Commission. It asked the startup if it may be interested to submit a grant proposal. The startup was very eager to acquiesce to this request because this funding had the potential to provide it with the necessary funds to further develop the artificial pancreas both effectively and efficiently. In addition, the startup believed that being granted funding by the European Union signaled to its network that it is a capable partner. So, the project could give it the legitimacy needed to attract new partners. Moreover, it did not have to attract funding from investors that would limit its freedom to make decisions.

#### *European project*

After the startup agreed to submit a grant proposal, they involved five other organizations into the project: a medical university (AT), an established industry player (DK), a clinical research institute (DE), a software firm (TR), and a technical university (NL). Together the partners wrote a grant proposal that both suited their own interests and the requirements of the European Commission. It appeared to be relatively easy to compromise over the agreements among them because most partners already had experience in working together. In this process, the startup mainly acquiesced to the suggestions of the teaching hospital. As the entrepreneur explained: "*for us [startup] it was the first time that we wrote such a proposal. Then you just follow their [teaching hospital] advice.*" The result was proposal that was granted more than two million Euros funding from the European Commission in August 2012.

In 2014, a conflict arose between the startup and the software company in the European project. The startup believed that the software company was not working effectively and efficiently. Therefore, it wanted to do the task itself, and requested a budget shift. The software company denied this accusation, and therefore did not agree with the budget transfer. In response, the startup tried to manipulate on the software company to comply with its request. This and the cultural differences between the partners spiraled the conflict out of control. The project leader explained the effect of culture dissimilarities on this conflict: "*It is true that they way of communication with a Turkish partner in a language that you are both not skilled in is different than when you can communicate entirely in your own language.*" As a result, the software company filed a complaint to the project leader. The project leader talked extensively with the partners to explain them that it is not in the project's interest when the issue escalates and either the startup or the software company leaves the project. As the partners trust the project leader's competencies, they agree to stick to their initial agreements. In addition, the startup is legally unable to demand a budget shift without the approval of the other partners. Although the worst part of the conflict was solved, the partners avoided further communication as much as possible. This did not benefit the development of the artificial pancreas.

Also in 2014, the established industry player decided to leave the project. The industry player was responsible for development of a stable, liquid glucagon formula. When the development of stable, liquid glucagon formula was shut down internally, there was no motivation for the industry player to join the European project any longer. Most partners of the project acquiesced to its leave, because its

budget was relatively small and they did not see any opportunity to exchange more knowledge and resources. Thus, it would be inefficient to continue anyway especially taking into account to low investments made in the relationship. Although the leave of the industry player gave the startup more freedom for to collaborate with other glucagon developers, it also created a considerable challenge. The availability of stable, liquid glucagon was crucial for the success of the artificial pancreas. At that moment, glucagon was only stable for 24 hours and then has to be thrown away. In contrast, the startup wanted to use glucagon continually. If patients had to throw away the unused glucagon every day, the costs for treatment with the artificial pancreas would skyrocket. However, as a report of the startup stated *“for the development of the glucagon we [startup] dependent on external partners, which makes it difficult to control... It [industry player] is a very trusted partner. The company will deliver the glucagon in the near future, but takes its time to develop the best possible solution. Therefore, we need an alternative when its glucagon development is delayed.”* Thus, the startup was already looking for the alternative companies that were developing glucagon. However, the need to create an alternative became suddenly more urgent.

#### *Glucagon company*

After the established industry player left the European project, the startup need to find a new partner to develop stable, liquid glucagon for its artificial pancreas. Via an American health foundation, the startup came into contact with an American company dedicated to the development of stable, liquid glucagon. In comparison to alternative glucagon providers, the angel investor told *“the others were not far enough [in their development]. It [glucagon company] was the most concrete... It was better positioned in the network; it touched upon our network. So, they could deliver fast, but also their network interaction was good.”* Therefore, the startup proposed to use its glucagon in one of the next clinical trials with the artificial pancreas. The glucagon company accepted this offer, because it was an effective and efficient way to test its glucagon.

Yet there was one problem; neither partner was willing to pay for the production costs of the glucagon to be used in the trial. The startup knew that an American investor had good relations with the American glucagon company. The startup had contact also with this investor that, although it was interested in the startup’s artificial pancreas, was not willing to invest because it was foreign initiative. Therefore, the startup thought it would be interested in providing the funds necessary to produce the glucagon for the trial. This was indeed the case. So, the investor invested financial resources in the glucagon provider. These funds were employed to produce the glucagon which was used in the startup’s clinical trial. So, the startup was able to create a solution because it was interconnected to both these partners. And both partners were willing to find a solution since of the mutual dependence between them.

#### *Health foundation*

In 2009, the entrepreneur of the startup and the head research of the Dutch diabetes health foundation met at a donor meeting. As the health foundation is the largest financer of diabetes related research in the Netherlands, the startup requested funding for the development of its artificial pancreas. The informal investor of the startup expected *“that we [startup] would receive funding from it [health foundation], but that failed”*. The proposal was denied by the foundation because the members of its internal auditing committee did not give their approval. This approval was necessary to legitimize the choice of funding the startup’s project both to its auditors and to its benefactors. However, the health foundation could do more than only providing financial support. It could *“also help by getting them [startup] in touch with other parties and researchers... We [health foundation] often can help people in other ways to find solutions for diabetes.”* Thus, the health foundation’s goal of finding a solution for diabetes provided them the willingness to support the startup, whereas the interconnectness in the network enabled them to do so.

In 2012, the health foundation found a way to circumvent the foundation’s auditing committee. They proposed, in collaboration with the teaching hospital and technical university, to apply for funding from the Dutch government. After negotiating the terms of this initiative both partners agreed to pursue. For the startup this was the best chance to obtain, although indirectly, funding from the health

foundation after four years of investing in the relationship. And the health foundation would be able to legitimize its funding for the project to its accountants and the wider public as the proposal would be reviewed by a committee of experts composed by the government. Moreover, it perceived this funding to be more efficient because it would finance several organizations at the same time which prevents fragmentation of its research projects and therefore money. However, the funding was not granted as a result of a lack of evidence on the performance of the artificial pancreas.

Before the funding application, the research foundation started a fund raising campaign for the artificial pancreas to obtain sufficient funds to finance the project. Therefore, when the application was rejected, the startup again requested direct funding from the health foundation. For the same reasons as mentioned previously, the foundation declined. The startup exerted pressure on the foundation using as leverage the funds that were already raised. As a consequence of this manipulative action, the foundation reduced its contact with the startup. The head of research of the health foundation told *“when it turned out that it [the project application] was not successful, it [relationship with the startup] retreated into the background. And I did not follow the developments closely any longer.”*

#### *Research institute*

In 2012, the health foundation organized a meeting for research institutes and industry to discuss the development of new glucose sensors. A research institute had some initial ideas about a new sensor that would not only be more accurate, but also cheaper. However, it lacked an opportunity for practical application in the market, while the startup did not have the required knowledge to develop the necessary sensor. As a consequence of this mutual dependence, they started a four year co-financing project *“in which you have steps from 10, 25, 50, and 100 percent that you [startup] have to fund yourself. The steps develop from scientific research to market authorization resulting in the exclusive rights.”* It was ‘take it or leave’ for the startup, since there were no exceptions to these terms possible. The part of the research institute is funded from taxes, and the European legislation regarding state aid prohibits any deviations from the percentage ratios. The startup complied with these terms since it appeared that existing sensors, which were used in the previous trials, were not accurate enough. Although it was not feasible to develop a complete new sensor in the short-term, the startup wanted to develop a new sensor that could be used in next generation prototypes. Additionally, it had confidence in the capabilities of the research institute to develop such a sensor.

In 2013, an issue between the startup and the research institute arose. After starting the relationship with the startup, the research began a multi-partner research program with similar goals. In this project the development costs could be shared and the risks of failure could be reduced by combining the resources and knowledge of several partners. As the research institute perceived this project to be more efficient and less uncertain, the research institute requested the startup to end the co-financing project, and to join the multi-partner research program. However, the terms of the research program were quite different than in the co-financing project. The multi-partner program would enable the startup to divide the costs of the project among several project members, but all members would be entitled to use the patent without paying a license fee. As this was incompatible with the startup’s organizational goals, it denied joining the project. First the startup wanted exclusive rights on the patent that would have been the result of the co-financing project to earn back its previous investments. However, the research institute did not comply with this request because the existence of the better alternative substantially reduced its dependence on the startup. Nevertheless, the research institute was legally obliged to comply with the current contract as long as the startup did not agree to suspend it. The re-negotiations took about a one-and-a-half years, and in that time the progress of the joint project slowed down substantially. As the angel investor explained: *“it [research institute] just has been obstructing us [startup] to exert pressure to join the multi-partner program. We said we will not do that... It used all tools to obstruct us.”* Although the delay did not threaten the development of the fourth prototype, the renegotiations cost the startup precious resources.

By the end of 2014, the health foundation came up with a proposition to create a solution to the issue between the startup and research institute. At the same time, this would solve the struggle between the startup and the health foundation. The multi-partner program of the research institute experienced that

it needed knowledge that exclusively belonged to the startup. Thus, the multi-partner program was not able to succeed without the involvement of the startup. The health foundation was one of the partners in multi-partner program, and it did not want to lose its investment. Therefore, it proposed to finance part of the startup's co-financing project with the research institute up till the point to which they could apply for a patent. The condition of this funding was that the startup would join the multi-partner research program after patent application. This solution appeared to be a win-win-win situation for all three partners. The health foundation was able to justify the funding to the research institute, because the multi-partner program was already approved by its internal auditing committee. The startup gained the exclusive rights to the patent without paying more for it, and also benefits from the knowledge and resources of the other partners in the multi-partner program. The research institute could share the development costs and the risk of failure. However, although all partners were willing to create a solution, it was only possible because the health foundation, research institute and the startup were interconnected. Overall the solution enabled improvement first in the co-financing project and later also in the multi-partner program. In the words of the entrepreneur: *"for everyone it is an opportunity to start over with new courage."*

#### *Market leader*

In 2012, the startup won the audience award of the health foundation. This award generated a lot of media attention. In this way, the project was picked up by a market leader in the diabetes device market. After negotiating the agreements, the startup and the market leader signed several contracts, such as a Non-Disclosure Agreement and Right-of-First-Refusal. They compromised that aim of the relationship in this stage was to explore the possibilities for more intensive collaboration. The startup actually wanted more from the start, such as an investment or joint development program, since it felt itself legally protected against imitation through their patent. However, the market leader did not fully comply because although it trusted the capabilities of the startup, the risk that the artificial pancreas would fail was still perceived be too high. Yet both partners believed that their mutual dependency could be a basis for further more intensive collaboration. In this collaboration, the startup could benefit from the production, sales and distribution facilities of market leader, and the market could profit from the innovation capabilities of the startup.

During the first two years of the collaboration, the market leader's confidence in the startup's capabilities grew. As the market leader explains: *"this is clearly a step; we [market leader] completed the exploring. We concluded that we wanted to continue with it [relationship with the startup]."* Therefore, the market leader proposed to intensify the collaboration. In specific, its proposal was to use its new sensor in one of the next clinical trials with the artificial pancreas. The startup acquiesced to this proposal because (a) the market leader's sensor is the most accurate existing in the world, (b) with a more accurate sensor the startup can achieve tighter control of the blood glucose level and (c) it would still require several years to complete the sensor of the research institute. In other words, the sensor was the most efficient, and the startup was dependent on the market leader to use this sensor.

#### **Comparing the actions and underlying rationale of the startup and its partners**

In this section, the actions and their underlying rationale of the startup are compared to the actions and their underlying rationale of its partners. For this purpose Figure 2 for the startup and Figure 3 for its partners were created. In these figures the count and percentage of the particular action and the underlying rationales are shown. Moreover, the thin and fat lines represent the amount of times that the startup and its partners mentioned a rationale as underlying a particular action. For example, the startup took manipulative action two times and mentioned similarity, efficiency and interconnectness as reasons for doing so. Overall, similarity was mentioned a single time as rational, efficiency six times and interconnectness four times.

Firstly, Figure 2 and 3 show that both the startup and its partners utilized the complete range of actions; they acquiesced, compromised, created, avoided, defied and manipulated. When comparing the number of times that the startup and its partners take a particular action, it appears that the startup and its partners were equally likely to take creative, avoiding, defying and manipulative actions. Yet the startup was substantially more likely to acquiesce to the initiative of its partner to change than its

Partner	Initiative to change	Interaction		Rationale		Outcome
		Startup	Partner(s)	Startup	Partner(s)	
Teaching hospital	Proposal of startup to run clinical trials in exchange for shares	Compromise	Compromise	Legitimacy (Asymmetric) dependence Organizational goals	Uncertainty Mutual dependence Trust	Converting
	Proposal of teaching hospital to submit a grant proposal to obtain funding from the European Commission	Acquiesce	-	Organizational goals Efficiency Decision-making freedom Legitimacy	-	Converting
Health foundation	Request of the startup for direct funding of the development of the artificial pancreas	-	Create	-	Organizational goals Interconnectness Legal Legitimacy	Mixed
	Joint initiative to submit a proposal to gain funding of the Dutch government	Compromise	Compromise	Relationship-specific investments	Efficiency Legitimacy Legal	Inhibiting
	Failure of funding application to the Dutch government	Manipulate	Avoid	Interconnectness Organizational goals	Legal Legitimacy	Inhibiting
	Proposal of the health foundation to join the forces to solve issues of both with the research institute	Create	Create	Interconnectness	Organizational goals Efficiency Interconnectness Legal Legitimacy	Unknown
Market leader	Request of the market leader to start an exploratory relation	Compromise	Compromise	Mutual dependence Legal	Uncertainty Mutual dependence Trust	Converting
	Proposal of market leader to use its sensor in clinical trial	Acquiesce	-	Efficiency Asymmetric dependence	-	Converting

**Table 5.** Events, actions & reactions of the startup and its partners, their underlying rationale and subsequent outcomes

Partner	Initiative to change	Interaction		Rationale		Outcome
		Startup	Partner(s)	Startup	Partner(s)	
European project	Grant proposal of the partners in European project	Acquiesce	Compromise	Asymmetric dependence	Legal Prior experience	Converting
	Industry player want to leave the project after it shut down its own glucagon development	Create	Acquiesce	Relationship-specific investments Efficiency Decision-making freedom Asymmetric dependence	Efficiency Relation-specific investments	Mixed
	Request of startup for budget shift	Manipulate	Defy	Similarity Efficiency	Similarity Efficiency	Inhibiting
	Complained files by the software company after conflict spiraled out of control	Avoid	Avoid	Trust Mutual dependence Legal	Trust Mutual dependence	Converting
Research institute	Proposal of the research institute to start a co-financing project to develop new sensor	Acquiesce	-	Mutual dependence Trust Legal	-	Converting
	Request of the research institute to join its multi-partner research program	Defy	Manipulate	Incompatible organizational goals Relationship-specific investments Legal	Efficiency Uncertainty Dependence	Inhibiting
	Conflict between the research institute and the startup solved by investing health foundation	Create	Create	Organizational goals Efficiency Relationship-specific investments	Interconnectness	Converting
Glucagon company	Proposal of the startup to use the glucagon of the company in its clinical trials	Compromise	Compromise	Organizational goals Efficiency Interconnectness	Efficiency Interconnectness	Converting
	No financial resources available to produce glucagon for trial	Create	Create	Interconnectness Mutual dependence	Interconnectness Mutual dependence	Converting

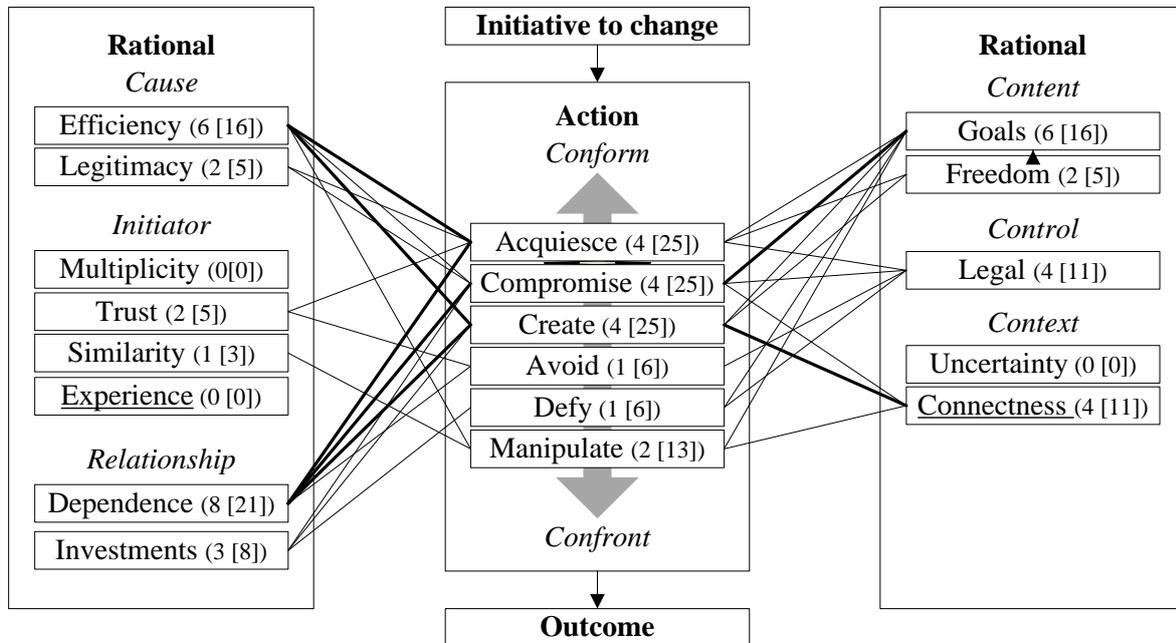
**Table 5 (continued).** Events, actions & reactions of the startup and its partners, their underlying rationale and subsequent outcome

partners. The startup's partners only acquiesced to the request of the industry player to leave the project, while the startup fully complied to the proposals of its partners several times. For example, when the teaching hospital proposed to submit a grant proposal to gain funding from the European Commission and when the market leader asked if the startup was interested in using its new sensor in the clinical trials with the artificial pancreas. Additionally, the startup's partners were more likely to compromise to its own or the startup's initiative to change the relationship than the startup itself. In most instances they tried to renegotiate the relationship agreements in a preserving manner. For example, when the teaching hospital and the startup negotiated about the amount of startup's shares in exchange for carrying out clinical trials by the hospital.

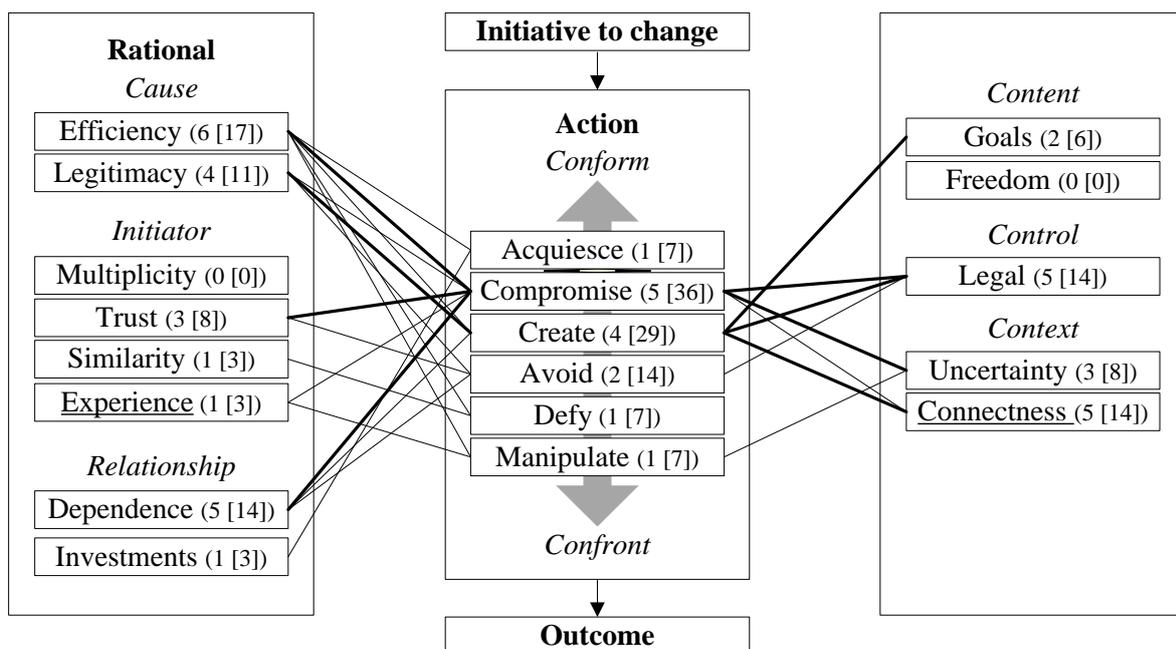
Moreover, Figure 2 and 3 show that the startup and its partners mentioned various reasons why to take a particular action. Firstly, it appears from the figures that efficiency influences the startup and its partner's way of acting. On the one hand, when the startup expected that its efficiency would increase by changing the relationship, it was more willing to acquiesce to its partner or find an innovative solution to solve the issue with its partner. On the other hand, when the startup's partners expected that the economical outcomes of the relationship would increase by changing the relationship, it was more willing to compromise to the initiative of the startup. For example, the glucagon company compromised to the initiative of the startup to use its glucagon in the clinical trials because it would save them the resources associated with executing its own clinical trials. In addition, the figures reveal that legislation and interconnectness have an effect on the ability of the startup and its partners to act. For the startup and its partners, legislation made it sometimes impossible to follow its own intentions (completely), and therefore acquiesced, compromised, created or avoided the initiative of its partner to change. However, in the instance of the conflict between the startup and research institute the existence of a legally binding contract enabled the startup to defy the request of the institute. It is also shown that when the startup and its partners were connected not only directly, but also indirectly – which we called interconnectness – influenced the ability to create solutions to the initiative of either the startup or its partner to change. The startup, health foundation and research institute were only able to solve the issues they had with each other because they were all related to each other.

Secondly, Figure 2 and 3 show that dependency, organizational goals, relationship-specific investments and decision making freedom are more important reasons for the startup to act than for its partners. Based on our analysis, dependency should be divided in mutual dependency, where organizations have complementarity resources and activities, and asymmetric dependence, where one organization needs an activity or resource that the other controls while the reverse is not the case. When having a look at Table 3, mutual dependence was both for the startup and its partners present and more likely to result in compromises. Whereas asymmetric dependence was only present for the startup, and likely to lead to acquiescence. Furthermore, the startup's organizational goals were, depending on whether the initiative of its partner was compatible with its organizational goals or not, resulting in acquiescing, compromising and creating or defying actions respectively. An example of the latter is when the startup defied the request of the research institute to transfer to the multi-partner program because the institute did not yet provide the startup with the exclusive right to the patent. Additionally, relationship-specific investments were for the startup an important rationale to create a solution to a conflict with a partner. For example, the resources invested in the relationship with the health foundation made it more willing to find a solution to circumvent the auditing committee. Moreover, decision-making freedom was an important underlying rationale to acquiesce and create. The startup fully complying with the proposal of the teaching hospital to submit a grant proposal as it makes is unnecessary to attract investor that would limit its decision making freedom.

Thirdly, the uncertainty regarding the outcome of the change in the relationship and trust in the startup had an important effect on the startup's partners to act in a particular way. When the partner perceived the uncertainty to be high, but it had trust in the startup's capabilities, it was more likely to compromise to the initiative of the startup. For example, the market leader wanted to compromise to the startup in their initial relationship since it perceived the uncertainty regarding the success of the artificial pancreas to be too high while it trusted the capabilities of the startup to develop it further. Fourthly, multiplicity, similarity and prior experience were all three not (often) mentioned as rationale underlying the action of either the startup or its partners.



**Figure 2.** Startup's actions and their underlying rationale (thin line = mentioned once as rationale for the respective action; tick line = mentioned at least two ties as rationale for respective link; (count [percentage]))



**Figure 3.** Startup's partners actions and their underlying rationale (thin line = mentioned once as rationale for the respective action; tick line = mentioned at least two ties as rationale for respective link; (count [percentage]))

## DISCUSSION

This paper attempted to address the questions from which range of actions can a startup choose from in interaction with its partners, and when it chooses a particular action. From this research startups can learn how to interact with their partners and when they should undertake a particular action. The findings of this research show that both the startup and its partners acquiesce, compromise, create, avoid, defy and manipulate. Thus, this research shows that the framework of actions developed by Tjemkes and Furrer (2010) and Lui and Ngo (2005) based on established organizations can also be applied to startups. This implies that to be able to increase our understanding of the interaction between a startup and its partners, the full range of alternative actions should be covered (Tjemkes & Furrer, 2010). When we compare our findings of Figure 2 and 3 to the matrix in Table 1, it becomes clear that the nature of interaction between the startups and its partners was more conceding in nature than coercing; overall acquiescence, compromises and creation are more prevalent than avoidance, defying and manipulation. Additionally, it appears that the startup and its partners less often conform to the substance of interaction than they confront it; compromising, creation, defiance and manipulation are more prevalent than acquiescence and avoidance. And most importantly, this confirms that actions that respectively are conforming & conceding and confronting & coercing networking not always happen simultaneously (Håkansson et al., 2009).

However, the startup and its partners used the alternative actions to a different extent. The startup and its partners used creating, avoiding, defying and manipulating actions to a similar extent. This contradicts Ariño et al. (2008) who found that entrepreneurial firms are less likely to act, and thus avoid their partner, in the presence of governance misalignments. In this case, the startup and its partners did not experience either excessive or insufficient governance that required action which may explain the different findings. However, the startup was more likely to acquiesce than its partners. This confirms the conclusion of Thorgren et al. (2012) who demonstrated that small firms are more likely to acquiesce than larger firms. In contrast, the startup's partners were more likely to compromise than the startup. This difference may be explained by the rationale underlying these actions. On the one hand, the startup appeared to acquiesce to the initiative to change the relationship by its partner when it was asymmetrical dependent on that partner to be efficient and effective. So, if the startup did not fully comply to the actions of its powerful partner, it runs the risk of losing its partner's resources, support and legitimacy (Oliver, 1991; Tjemkes & Furrer, 2010). On the other hand, the partners compromised in situations where they trusted the capabilities of the startup and recognized they had complementary activities and resources, but the uncertainty related to the outcome of the relationship was perceived to be high. Typically these partners have interests which may be harmed when the collaboration fails. Therefore, they want to protect these interests by limiting the investments in the relationship before it is proven that the startup can be trusted (Oliver, 1991; Pfeffer & Salancik, 1978). This implies that mutual dependence leads to compromising action by the startup's partners while asymmetric dependence results in acquiescing by the startup itself.

This finding also confirms that the choice of a particular action over another is not isolated (Ariño et al., 2008). In this case, it was influenced by the perceived future economical outcomes of the relationship; the perceived gains in legitimacy from the network; current trust in the partner organization's capabilities; similarities and dissimilarities between the partners; current asymmetrical and mutual dependence between the partners; past relationship-specific investments of a partner in the relationship; the compatibility with the current goals of the organization; the perceived limitations to decision-making freedom in the future; current legal standing aspects of the relationship; uncertainty regarding future outcomes; prior working experience with the partner; and interconnectness of the relationship in the wider network. It appeared during the data analysis that the latter two should be added to the initial framework. Firstly, prior working experience with the startup made it for its partners easier to take an initiative to change the relationship that was suited to the startup's intentions. As a consequence, the startup was more likely to acquiesce or at least compromise to the initiative of its partners. Secondly, interconnectness appeared to be especially important to be able to create solutions when both the startup and its partners were willing to collaborate. In several instances, the startup and its partners were able to solve the issue at hand by involving a third partner into the

relationship. This confirms the findings from Corsaro et al. (2011) who demonstrate that network characteristics influence the amount of conformation and confrontation in a relationship. If the startup or its partners would not have had these connections, it would have been very hard to solve the conflicts. At the same time, it suggests that the initiative to change an existing relationship affects the network in which the relationship is embedded (Håkansson et al., 2009). By involving the third partner into the relationship between the startup and a particular partner, the balance between the relationships in its network change. Therefore, it would be interesting to further research how the two networking actions of Håkansson et al. (2009) on the network level – creating and consolidating – affect and are affected by the actions identified in this research at the level of relationship.

Furthermore, it was found – as expected – that there were differences in the underlying rationale for action between the startup and its partners. The underlying rationalities dependency, legitimacy, organizational goals, relationship-specific investments and decision making freedom were more important to the startup than to its partners. These reasons may be more important to the startup since they are often short of financial, manufacturing and marketing resources, while aim to develop innovative products and services to challenge competition. Consequently, a business relationship is often a matter of survival and growth. In addition, they have often less legitimacy due to a lack of track record. And startups want to retain control over their technology and to keep their organization flexibility (Das & He, 2006). In contrast, uncertainty regarding the effect of the change in the relationship and trust in the startup had a more important effect of the startup's partners to act in a particular way. These motives may be more important to the startup's partners as they were all established organizations. Established organizations are often skeptical about new technology. In turn, they aim to capture their current technology and defend themselves from competition from newcomers. As a result, they sometimes only collaborate as a blocking strategy (Das & He, 2006).

Besides the actions and the underlying rationale of the startup, we also explored the interactive nature of networking by collecting data from both the startup and its partners. A closer look at Table 3 shows two interesting avenues for further research. Firstly, the initiative to change the relationship by the startup or its partner is always followed an action of the counterpart and then most of time a reaction on the initiator as well. For example, after the health foundation denied the second request from the startup for funding, the startup tried to manipulate the health foundation into funding the startup, after which the health foundation started to avoid the startup. This confirms the suggestion that partners are and need to be actively and directly involved into actions of startups in relationships. However, it is still to be studied if and which particular actions of startups are more likely to cause certain reactions of its partners and vice versa. Secondly, the startup and its partners take different actions in the same relationship over time. For example, during the relationship between the startup and the research institute, the startup acquiesced, defied and created while the research institute manipulated and created during this relationship. This provides support for the argument of Håkansson et al. (2009) that organizations need to take different types of action over time to achieve their objectives. However, it may be interesting to research if there is pattern in the interactions of startups and their partners over time and if so how this pattern looks like. In this way, a better understanding is created on how startups interact in their relationships.

Furthermore, the case analysis shows a notable result regarding the effect of action on the relationship. It appears that the outcome of an action is closely related to the nature of initiative to change. If the initiative to change was perceived to be positive in nature, they had a more converting outcome. For example, the use of the market leader's sensors in one of the next clinical trials of the startup can be beneficial to both. In turn, this motivated the startup to acquiesce to the request of the market leader. If there was an inhibiting effect after a positive initiative change, this was often caused by the inability to take the preferred action. This was the case in the relationship between the startup and health foundation as explained previously. However, if the initiative was perceived as negative, such as a conflict, the effect of action can be threefold: (a) creative actions did solve the issue and had an converting effect; (b) avoidance lead to stabilization of the conflict and had neither a converting nor an inhibiting effect; (c) defying and manipulation caused the issue to spiral out of control and had an inhibiting effect. The same applies when the startup and its partner did not agree whether the event

was of either positive or negative in nature. This finding is notable because existing research mainly focusses on adverse situations in relation to the actions and reactions of partners in a relationship (Ariño & de la Torre, 1998). However, this finding shows that to benefit from arising opportunities partners need to act upon them. Future research may further explore the different effects of opportunities and threats for a relationship on the actions taken and its subsequent inhibiting or converting effect.

In conclusion, this research contributes to the literature on startups and networking in relationships by a) studying the range of actions that a startup can choose from in its interactions with partners instead of focusing on a single action, b) investigating the interactive nature of these actions by involving the partners action directly and actively into the research instead of focusing on one side of the relationship and c) researching similarities and difference in the rationale underlying these actions between startups and established organizations. The findings of this research imply that startup can and do choose from a spectrum of actions in interaction with its partners. However, to be able to act a startup does not only need to understand the rationale underlying action to know how and when to act, but also take into account how its partner will react and the reason behind this reaction. In other words, startups do not only have to think for themselves in networking, but also for their partner.

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