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Managing Inter-organizational agile innovation: A case study

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Abstract

Technology firms increasingly rely on inter-organizational innovation to keep up with today's volatile environments. Implementation of such innovation projects must also deliver results in a timely manner, causing firms to make use of agile development methodologies. This study examines several such innovation projects of a telecommunications firm conducted in collaboration with different partner firms. We focus on the conditions that enable or hinder certain formal contracting and informal governance methods under time pressure and high uncertainty. Through interviews with both sides of the collaboration we aim to understand why and which agile coordination practices and contractual arrangements match each other and the varying demands triggered by competitive pressures. Our results indicate that (i) ?compatibility of practices' impacts how collaboration works, as separate from complementarity of assets and capabilities that motivates collaboration at the first place, and (ii) suitability of contractual forms is contingent on both time pressure and agile practices employed. Our findings also highlight that there is room for innovation in contractual forms in order to match the contemporary contexts of innovation, in addition to innovation in the products themselves.

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Introduction

In most of the volatile environments which business organizations face today innovation is the key to success and doing it in the right pace is of utmost importance. The introduction of new transportation and communication technologies allowed economies of speed (Chandler, 1977). In an example by Drucker (1985) a pharmaceutical firm would continuously review their innovation process to assess whether their drug developments are going "at the right speed" . This is because "global competition, and diversification in the sources of new knowledge compels firms to make decisions faster, and to reduce time to market in order to capture value from technological innovation (Teece, 1996). Those companies who fail to respond in a timely manner allow for disruptive technologies to emerge and invade the "slacks" in established value networks with stunning speed (Christensen, 1997). An exogenous technological innovation may have a significant impact on firm boundaries, while the extent of such impact will differ based on the asset specificity, information symmetry, and opportunism potential of the context (Afuah, 2003). In response, firms depend on their dynamic capabilities to explore and win over the uncertainties in blurred market boundaries, shifting market players, and unclear industry structure through innovation (Eisenhardt & Martin, 2000).

Among several contemporary frontiers of innovation management that challenge researchers and practitioners alike, agile innovation is emerging as an important area. Agility, which is a combination of speed and adaptation, is a way to deal with the unexpected. Agile innovation methods, although developed in the software cocoon until very recently, provide responsiveness and helps managing uncertainty praised in innovation project management (Loch, De Meyer, & Pich, 2007). Thus it is fast becoming a highly desired quality of innovation activities which involves many surprises due to its increasingly more complex nature. For this reason, agile approaches are praised and voiced more frequently by innovation practitioners in recent years (Deimler, 2011).

Innovation projects today cross organizational boundaries more often than they did in the past. As firms "recognize that they cannot themselves maintain cutting-edge technology in every field required for the success of their product" (Gilson, Sabel, & Scott, 2009), they seek complementary capabilities and assets of other firms to integrate into their innovation efforts (Lichtenthaler & Lichtenthaler, 2009; Rycroft, 2007). However, even in the face of complementarity that motivates collaboration, inter-organizational collaboration for innovation is hardly guaranteed to work and deliver results on time (Tortoriello & Krackhardt, 2010). Unlike intra-organizational projects which mostly face task related complexities, inter-organizational collaboration projects also face relational complexities due to differences and conflicts among the interests of parties involved (Loch, De Meyer, & Pich, 2007).

Purpose of our ongoing research study, whose early findings are reported here, is to explore contingencies of formal contracts and informal governance methods in inter-organizational innovation projects under time pressure and uncertainty. In doing so we aim to understand why and which agile coordination practices and contractual arrangements in inter-organizational projects succeed or fail in the face of varying demands triggered by competitive pressures to finish innovation projects in shorter time. While existing research and theory focuses more on how complementarities motivate inter-organizational collaboration for innovation projects at the first place, we aim to expose factors that make them work in an agile manner. One particular factor we focus is the way 'compatibility of practices' impacts how collaboration works (as separate from complementarity of assets and capabilities that motivates collaboration).

Our research setting is a large scale telecommunications and technology firm based in Turkey, and we use multiple innovation projects as cases, all conducted in collaboration by the focal firm and other, smaller firms. Following the theoretical background and model presented further below, we present the research cases and how they expose the variety suggested by our model. We then report preliminary findings from our first round of interviews and discuss their implications for theory and practice.

Theoretical background and model

There are broader theories such as dynamic capabilities theory, as well as more practice oriented research fields such as open-innovation which are relevant for our research. We discuss most relevant ones in the following subsections, which is followed with a simple model that casts our research perspective.

Dynamic Capabilities

Dynamic capabilities are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die (Eisenhardt and Martin, 2000). Dynamic capabilities are defined as the firm's ability to integrate, build and reconfigure internal and external competencies to achieve new and innovative forms of competitive advantage in a certain context, based on path dependencies and market conditions. The term 'dynamic' then emphasizes the reference to a Schumpeterian world of innovation-based competition on rapid technological change, time-to-market criticality, inability to determine state of future markets and competition, and the 'creative destruction' of existing competences. When applied to the theory of the firm, competencies and

capabilities are seen as ways of organizing and getting things done which cannot be sourced using the price mechanism. Thus, the "very essence" of most capabilities and competences is that they are not readily available through markets (Teece et al., 1997).

Teece (2007, 2016) later refines this theory such that dynamic capabilities are categorized as

- sensing and shaping opportunities and threats: identification, development, co-development, and assessment of technological opportunities (and threats) in relationship to customer needs
- seizing opportunities: mobilization of resources to address needs and opportunities and capture value from doing so,
- and transforming or shifting: maintaining competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets.

This does not mean that firms are in a position to build all the necessary capabilities by themselves without working with externalities. The ability to acquire technology externally is as equally important as developing technology internally and in order to enhance their 'absorptive capacity', firms should build upon their learning activities and skill accumulation because "the boundaries of the enterprise need to be artfully contoured for each major innovation" (Teece, 2009).

Absorptive capacity details this boundary-crossing capability of acquiring knowledge and combining it with the existence knowledge base and requires certain capabilities of the internal staff because hiring new technical staff alone will not timely respond to the need to combine new technical knowledge with existing procedures, routines, complementary capabilities and relationships (Cohen & Levinthal, 1990). This responsibility can be extended to different boundary-spanning roles (Tushman, 1977; Teece, 1997) within the organization as well as across the organizational boundaries such as the role of an 'idea scout' and an 'idea connector' (Whelan, Parise, de Valk, & Aalbers, 2011) but just as the organizational knowledge is tacit, the organization's absorptive capacity also depends on the links among a set of individuals and thus absorptive capacity spans a broader scope than the individuals themselves (Cohen & Levinthal, 1997).

In order to complement the unidirectional perspective of absorptive capacity, other knowledge management capabilities should also be taken into consideration. Of these, connective capacity is defined as the capacity to retain knowledge outside a firm's boundaries, such as in alliances. Desorptive capacity, on the other hand, points out the firm's ability to exploit its internal knowledge outside the firm boundaries (Lichtenthaler & Lichtenthaler, 2009). A very similar capability is called multiplicative capability as the ability to exploit the innovation outside the boundaries based on knowledge transfer and partner selection skills while relation capacity is the ability to select and work with firms under alliances and joint ventures (Gassmann & Enkel, 2004).

Alternative conceptual models for dynamic capabilities exist. Pavlou and El Sawy (2011) model dynamic capabilities that take existing operational capabilities to reconfigure new operational capabilities through the following four steps:
- Sensing: Spotting, interpreting and pursuing opportunities.
- Learning: Revamping existing operational capabilities with new knowledge
- Integrating: Embedding new knowledge into operational capabilities with collective sense-making

- Coordinating: Deploying tasks, resources and activities in reconfigured operational capabilities.

Inter-organizational and open innovation

Recent research has focused on developments on what is called "hybrid" modes of organization, such as long term contracts (Williamson, 1996), joint ventures, and alliances to understand the relationship between firm boundaries and innovation, so the original question about the nature of the firm turns from a 'make vs. buy' decision to a 'make vs. buy vs. ally decision' (Jacobides & Billinger, 2006). Joint innovation and exploitation can be achieved through a coupled process where the alliances with complementary partners in which give and take is crucial for success (Gassmann & Enkel, 2004). The formal structure of these partnerships may take a variety of forms: institutional alliances which are created through a separate corporate entity such as a joint venture are perceived closer to the focal firm while contractual alliances that are created through a legal agreement on contribution and benefits are found to be closer to market transactions (Mudambi & Tallman, 2010). However, this research, including the field of open innovation (Chesbrough, 2003) which most directly addresses inter-organizational contexts of innovation, rarely addresses the dynamics of inter-organizational innovation projects (Bogers & West, 2012). Despite relative maturity of innovation management in a single firm (Dodgson, Gann, & Salter, 2008), inter-organizational innovation literature mostly have a black-box focus which overlooks management of the process itself. On the other hand, project management literature is process oriented but it tends to be confined to a single organization. Nevertheless, there are several works that explicitly address inter-organizational innovation projects, in particular the use of contracts for managing cross-boundary issues (Loch et al., 2007; Sumo, van der Valk, van Weele, & Duysters, 2016). Also, some works in the fields of agile software development and open source software has a similar focus and research orientation (Dybå & Dingsøyr, 2008).

Innovation governance and contracts

The collaboration between two parties is shaped by formal and informal governance mechanisms. Informal governance mechanisms such as trust, based on familiarity has a role in governing inter-firm collaborations (Gulati & Sytch, 2008). As a formal governance mechanism, contracts have been studied in order to explore how they can support innovation (Hofman, Faems, & Schleimer, 2017). Contracts are the typical means of governing how hold-ups, hostage situations, knowledge spillovers and opportunism is managed throughout an inter-firm relationships life cycle (Nooteboom B., 2004). When the development or acquisition of competitive advantage cannot be achieved through internal development or vertical integration, contracts can govern the acquisition of knowledge, innovation and new product development processes. These contracts can govern various forms of collaboration, from strategic alliances to outsourcing. The challenge here is the fact that innovation is risky and a risk-averse partner may take conservative decisions and establish greater control at the expense of creative freedom (Sumo R. , Valk, Weele, & Duysters, 2016). Thus, the general issue with those contracts involves the trade-off between brevity, flexibility; as well as the trust provided by flexible open terms and the distrusting nature of inflexible detailed terms. Especially those contracts with detailed default or penalty clauses for poor performance deter innovative problem solving and cooperation (DiMatteo, 2010). Performance based contracts are found to be more effective

in supporting innovation (Sumo et al., 2016). However, assuming that the contracts are the only factor that underlies most of the entire collaborative innovation trajectory would be too simplistic, as there exists many uncertainties. Essentially the contract is more like a preconception or guiding course to a project, and practices in driving or managing the process matters greatly.

For inter-firm innovation to work, two sides of the collaboration need to share a common language and common practices to remove daily hurdles and create value. At the basis of this compatibility lies the knowledge bases of two firms that are in collaboration: the cognitive distance between firms that hold different resources and innovative performance are found to be significant. Performance differs when resources are either very similar, or alternatively, very different. According to this research, there is an inverted U-shape relationship between cognitive distance and innovation performance: as cognitive distance increases between involved firms, it has a positive effect on learning by interaction as it allows for opportunities of novel combinations. As the cognitive distance exceeds a certain point, however, a sufficient basis for mutual understanding disappears. In other words, the challenge is to find a partner at sufficient cognitive distance to tell something new, but not so distant as to preclude mutual understanding (Nooteboom, Van Haverbeke, Duysters, Gilsing, & Van den Oord, 2007). However, compatibility should not be limited to the knowledge based alone as practices, processes and routines will also play a role in innovation performance.

Agility

Findings on adaptive management of innovation that are both inter-organizational and agile are rare (Cooper & Sommer, 2016). Yet, agile innovation practices are becoming commonplace in many industries other than software (Rigby, Sutherland, & Takeuchi, 2016), and many of its applications face an inter-organizational setting. Agile approaches promote self-managing and cross-functional teams with a focus on communication rather than contract enforcement and chooses iterative exploration over long term planning and big design up-front. Due to its very nature, agility contradicts the planning that underlies the commonly used forms of contracts. Agility is considered essential when confronting the deep uncertainty and associated threats and opportunities characteristic of today's innovation economy, especially in firms that are exposed to risk and should be considered in combination with requirements of the business environment and the firm's strategy. It can come into effect in different levels under the dynamic capabilities framework. In sensing opportunities and threats, firms need to generate new scenarios and build, sometimes redundant capabilities to address them. When seizing those opportunities and building slacks into the organization, using flexible sourcing contracts and open innovation can provide the firm with the necessary strategic agility. At the product development level, agility takes the form of iteratively building on a Minimum Viable Product (MVP) through continuous learning and validation (Teece et al., 2016).

Conceptual model of study

In attempt to conceptualize contingencies of agile practices in combination with other means of coordination such as contractual arrangements in inter-organizational contexts, we have constructed the interaction model in Figure 1. This model poses practice compatibility between innovation project partners as one of the factors of agility.
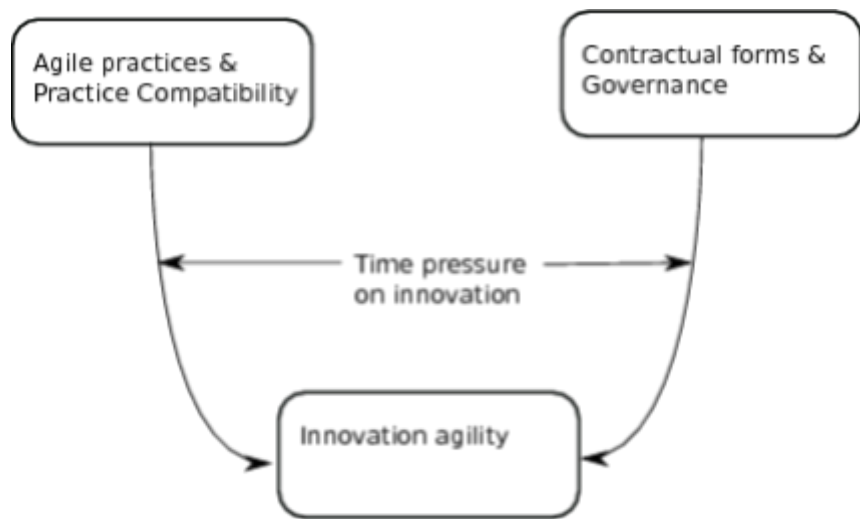
Figure 1: Conceptual model for contingency between practices & practice compatibility, contractual forms & governance, and time pressure.

Our inclusion of practice compatibility in our model resonates with the 'cognitive distance' concept in open innovation literature which investigates how the overlap of the existing knowledge base of two collaborating firms will affect their knowledge exchange (Nooteboom, Van Haverbeke, Duysters, Gilsing, & van den Oord, 2007). In a similar vein, we consider how the level of compatibility of two firm's agile practices will impact how well the inter-firm collaboration works. In other words, compatibility of two firm's practices are taken as a possible precursor of their dyadic, *cross-boundary* capability to work in an agile manner.

On the other side of the model is contractual forms which, in contrast to agile practices, represents whole innovation life-cycle and planning. We include time pressure as the factor which affects suitability of both contractual forms and cross-boundary agile practices.

Research Case and Method

This research is conducted in a large scale telecommunications firm, called Theta for convenience here, which runs numerous inter-organizational product development projects. With around 5000 employees and international operations Theta has been a communications service provider (CSP) in the market for almost two decades. It has seen a very steep market growth in its first decade as the market was growing from almost a non-existent position. It had enjoyed quite high profit margins. The fast growth forced it to create a culture which is very dynamic and fast. Competition required it to respond quickly to new developments in the market, while high paced growth required it to continuously readjust its capabilities and resources to meet the new demand patterns. The market has become more and more regulated over time as well, which forced Theta to keep up with exogenous changes in a timely manner.

In recent years, OTT (Over the Top) players such as Apple with its iTunes music service, Netflix, Facebook, Google – especially with YouTube, Spotify and others have started to challenge the content business models but they also had a significant impact on the CSP businesses: they require and consume most of the new high bandwidth and fast data networks provided by the CSPs, while enjoying the benefits without sharing any of the profits with them. In certain markets this situation was being regulated by rules under the

name of "Net Neutrality", in other markets, the OTT players would simply depend on customer demand and would not negotiate any terms with the CSPs to change the revenue distribution model.

Theta revised its innovation centered strategy to defend its growth and market position. This turn soon made evident that the company needs to transform itself into a technology company that innovates new products and services, rather than sticking to its GSM provider cocoon. With a clear strategic focus in place, the company has started exploring several avenues of innovation to attract consumers and business customers, in areas ranging from TV content subscription and fiber internet services to mobile payment systems and other mobile technologies. In this new era the company had to extend its set of technological competencies. It also found itself working with many technology partners in innovation projects.

All these changes in the business context required Theta to look for new capabilities to stay competitive in the market. First of all, it decided to create its own content business, aiming at taking a share of the profits from the highly demanded streaming based music, video and TV content businesses. It also added other content businesses to its target portfolio such as learning content, search and messaging.

As part of this strategic shift Theta also decided to explore new ways of work. In 2015, the company started exploring agile practices in one of its divisions to speed up its campaign generation capabilities using agile methods. Impressed with the success of the deployment of agile, it decided to deploy it to a wider base, especially in software development area. These transitions created a mix of practices with some projects still start or continue with more classical, waterfall based software development practices where cost and scope, as well as innovation targets are fixed in the beginning. Some start with the waterfall approach but then look for ways to become more agile. Some other projects start with agile in mind and continue that way.

This shift not only required Theta to change its working practices, but also the working practices of its partners as most software projects were being carried out with one or more technology partners. A change that was introduced to the collaboration methods of Theta was the way contracts were outlined with software development partners. Initially, there were two main methods to initiate a joint project: a fixed price contract and a time-and-material contract, also known as the person-day contract. In the fixed price contract, the project was defined up front with a fixed scope and one or more candidate firms would bid for it and the awarded party would work together with Theta on the project's delivery. The price would be agreed at the time of contracting and the scope can be managed well, the partner can reach the profit margin it has anticipated at the time of contracting. If the scope or other performance factors cannot be managed, the cost of the project may very well go out of control for the business partner, also leading to timeline issues. The risk of the project is mostly carried by the partner, not the focal firm Theta. When the project is complete, the relationship would typically end or get extended through another scope of work. The appropriation for the focal firm is the value created from the project while the partner only makes a profit or loss based on its realized cost basis.

The arsenal of agile practices within the software industry has developed in small teamwork settings and intra-organizational projects, and not the sort of inter-organizational projects Theta is struggling with. Perhaps the only similarity between these contexts was the need to start with vague requirements and focus on doing whatever one can to clarify

and satisfy the requirements as soon as possible. But apart from this similarity point, inter-organizational projects -which commonly uses fixed price contracts- relies on clear requirements to allow the contractor plan its resource use and the buyer to control for risks. Overall such project partnerships provided Theta with access to partner capabilities but introduced uncertainties and risks, and any means of controlling these risks meant slowing down the contracting and executing processes. On the other hand it was evident that agility was the primary capability Theta had to have.

In addition, agile practices relied on intense, face-to-face communication in cooperative settings, thus applying them when working with a partner who has a separate office and their own work plan was a real challenge. Furthermore sharing innovation related information with outside partners was an issue in itself, even under non-disclosure agreements (NDAs). Theta did have partners with whom they developed a good level of trust over the years which eases these problems considerably. But the company often has to work with fresh new partners for accessing the technological capabilities it needs.

It was in this climate that Theta revised its contracting forms and introduced a third, performance based contract form to manage uncertainty and cost and reduce risks for both itself and its partners. Based on the function point analysis discipline, 'Function point contracts' for software projects allow finer pricing and tracking of project progress while still retaining clarity of the outcomes to be delivered. Theta put these contracts into use quite quickly but not all teams in Theta and its partners were experienced in applying them. Also most teams were inexperienced in agile practices, let alone being able to adapting them to an inter-organizational setting where partners work in different locations.
Some older but long running fixed-price and time-and-material contracts continued to run in parallel and this context allowed us to study the dynamics in different inter-organizational innovation projects.

In order to test claims laid by our conceptual model, we have chosen several cases that sample the factor space. In other words, we have chosen innovation projects that Theta runs with different partners, and under varying time pressure. All chosen projects apply same or similar agile practices to some degree. Cases are selected with a convenience sampling method, and considering not only how the partners' practice compatibility with Theta varies, but also whether the contractual forms used in the projects are different. This selection allows us to compare different combinations and explore reasons behind project performance in terms of contingency factors. In time of writing this abstract several projects was chosen to be included in our sample but we have examined only two projects.

We have used a qualitative approach based on ethnographic and autoethnographic research and have conducted in-depth semi-structured interviews with project managers and team leaders. One of us (XXXXX) has been working as a manager at Theta and is in charge of projects similar to those in the sample. Therefore, his experiences and observations has been vital in interpreting the results.

Main findings

Contract improvements and performance based contracts
Preliminary interviews demonstrate that parties are constantly looking into ways of improving contracts. In one of the projects, a new form of 'performance based contract' for

cost control and delivery, named Function Point Contract, was introduced. This new contract model also ensured a higher trust relationship between the collaborating parties, as demonstrated in the following except from one of the interviews:

> *"[In the previous model] developing trust was difficult. Due to increased visibility it is easier for trust to develop in this new model… and it ensures a fair process. I mean there's no bargain like that any more 'hey c'mon that is 20 man-day, not 50', or vice verse … and it is easier to convince the business teams for this. So this makes the two sides move closer." (*Interviewee 1*)*

Interference between contract and agile practices

Contracts are also found to be interfering with applicability of agile practices. In one project Theta team was working on their own in the early phases. Even though agile practices were not a company standard at the time, a number of agile practices were employed in the project. These practices continued when a partner is included in the project with a person-day based contract. After project schedules slipped significantly the contract with the innovation partner had been changed from a person-day contract to a fixed-price contract to ensure delivery; and the way that second contract was designed has since become a major source of dispute and discussion. A more classical, waterfall-based planning was introduced with the new contract. Then the partner have decided that they will mostly work from their own offices and that meant the end of earlier agile practices:

> *"Although there was no widespread talk of agile in Theta at the time, in the first project we have successfully used post-its on the walls, and having analysts and developers work together in the same room. But when the contract has changed and firm V came in as a partner, agile working was over. Everyone started working in their own locations and offices."(*Interviewee 2*)*

Compatibility of practices and its impact on cross-boundary collaboration

During the interviews we have noted that some Theta managers based their partner selection not merely on the basis of partner capabilities or tender price. They had a preference towards partners whose set of work practices were compatible with their own team:

> *"We have put assessment criteria at the very beginning. ...For example we have asked whether they have UX capability, although it was not UX we were hiring them for. .. Nor did we have any idea about we'd be doing agile at that time, but we asked whether they have experience in trending agile practices like scrum and function points. … So we have eliminated quite a bunch out of 25-30 candidate firms."(interviewee 1)*

On the other hand this was not the standard practice and more traditional approaches of partner selection co-existed:

> *"There were 7-8 firms in the bid. … V was the one who gave the best price."*
> Q*: "Was experience in agile practices was one of the partner selection criteria?"*
> A*: "No, agile wasn't on the list, knowledge of the application domain was more important."* (Interviewee 2)

There seems to be several consequences of having this depth of information about the partner. The excerpt below demonstrates how the two teams were at greater ease to

collaborate because of compatibility. They were able to work beyond their predefined roles, hence overcoming friction due to firm boundaries:

> *"For example there was the thing about gamification… We could do it ourselves but we knew they already have the know-how. It would be quick for them to adapt it to us. And they were quite willing too, from the moment they learned about our need in the agile stand up meetings. We are still shaping it together. So it turned from 'you order and we do it' to 'let's do it together'. So essentially shoulder straps were taken off, meshing the structures and reducing the boundary between business, IT, and the partner"* (Interviewee 1)

Effect of time pressure

In one of the projects the original contract was a fixed-price contract. But it became evident that there were issues in terms of scope, architecture and time lines. In response to these problems under time pressure, both parties skipped the contract renegotiation phase and decided to change their routines to a more agile mode, removing boundaries between the teams as much as possible:

> *"Time pressure was an important factor in this collaborative work. When we first sensed the timing problems we have tried ... clarifying expectations to speed up the partner. But at some point we have noticed that this will not solve the problem...and it will be our loss if we keep waiting for a delivery. So we went to them with a proposal … told them 'train us a bit about this stuff so we can flex our muscles together'. This helped, and relived them. .. because stress can effect the project, these are human after all, you know. This proposal releived them."* (Interviewee 3)

Discussion of results and implications

There are several leads in our first round of field interviews that we intend to pursue further. First, our preliminary findings indicate that as the pressure on innovation speed increases, most inter-firm collaborations tend to move towards agile practices on both sides of the boundary. Since agile practices are based on intensive communication, the resulting organization looks more like an inter-organizational joint innovation team, rather than two separate teams interfacing via formal means. This is an optimistic outcome though, as many things could go wrong and two sides could turn hostile. Such an outcome will rely, at the very least, similar positive expectations from agile practices in both sides, and a certain level of trust between them. Nevertheless, in the case under study time pressure turns out to be a primary factor which invites relevant practices into use and causes the two sides to be more pragmatic and less defensive. The diagonal in Figure 2 shows what we suggest as the contingency of agile practices to time pressure.

Second, our findings indicate that if compatibility of practices is high, collaborating parties can resort to informal methods for governance, as trust is more easily established throughout the inter-firm collaboration and governance may move away from the formal, contractual basis. The contingency line in Figure 3 illustrates this point. If the compatibility of practices is low, then governance tends to be mostly left to formal methods such as contracts and most conflicts are managed through the contractual framework, or vice versa, as shown in Figure 3. The overall result of a shift towards compatible practices leads to an improvement of dynamic capabilities to conduct innovation in a cross-boundary setting; put in another way compatibility of practices potentially improves co-capability of the partners.
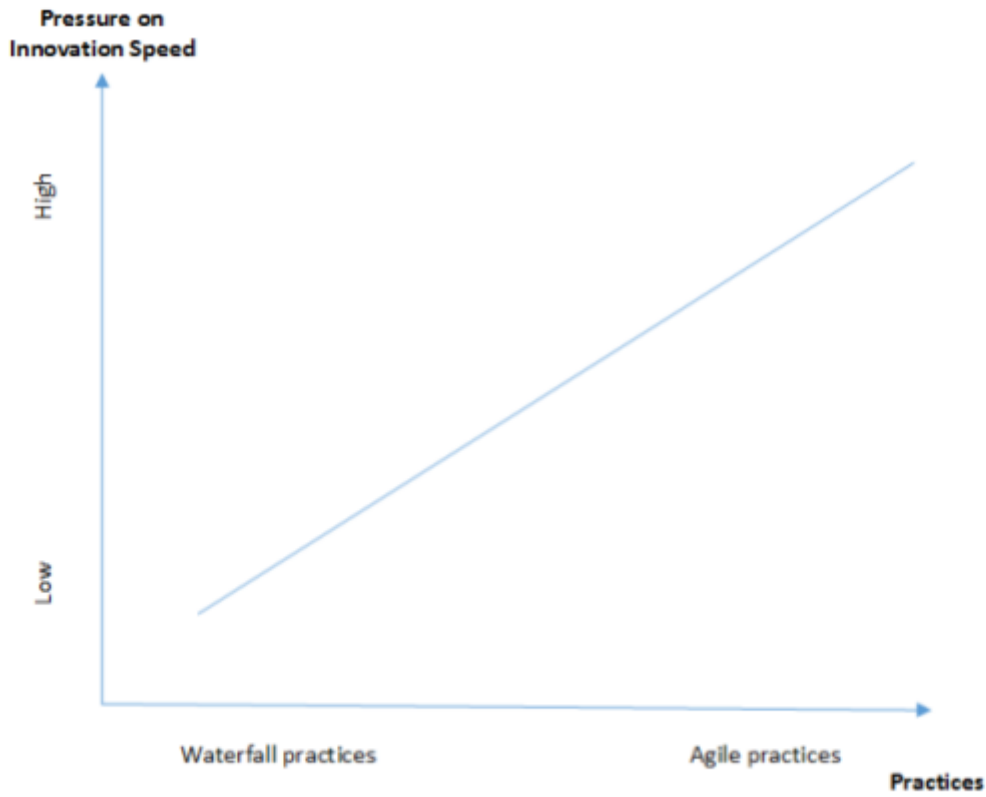
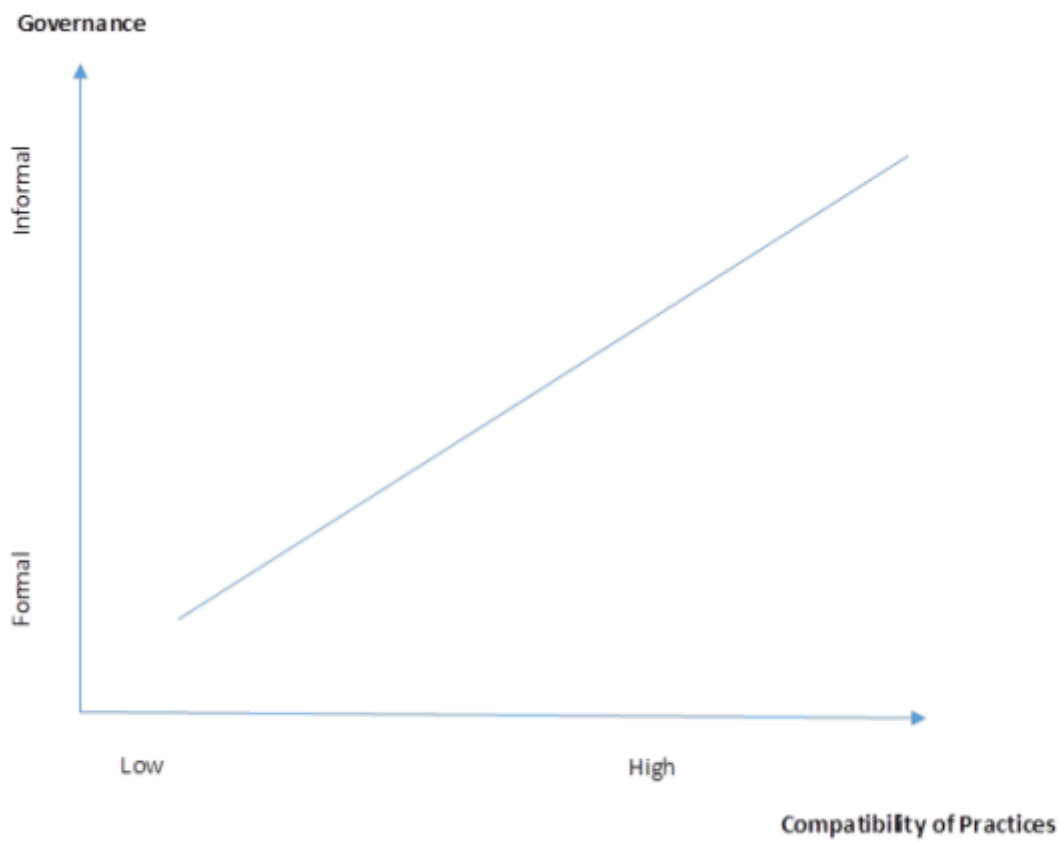Figure 2: Contingency of agile practices to time pressure on project.

Figure 3: Contingency of governance style to compatibility of practices.
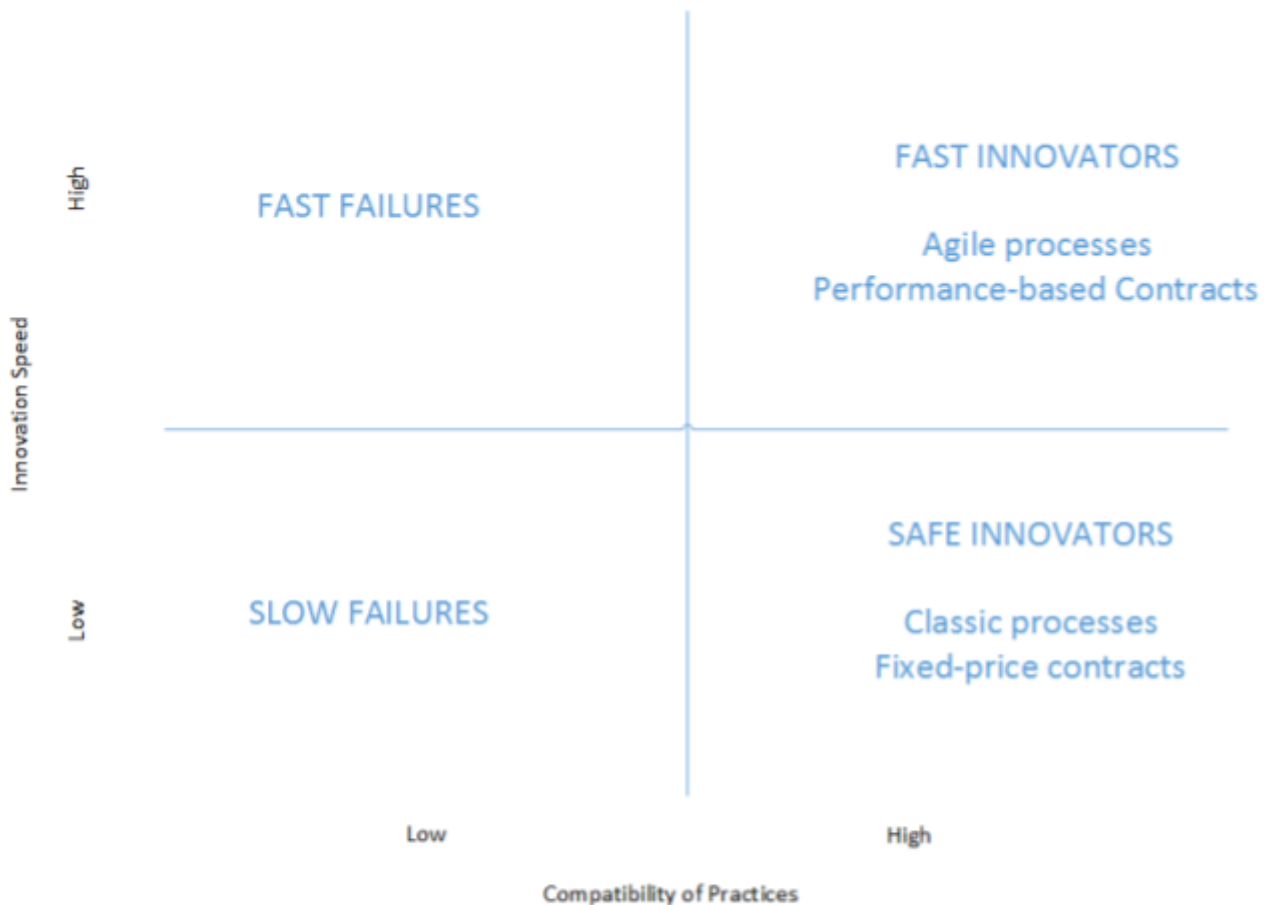
Figure 4: Interaction of practice compatibility and innovation speed

Third, there appears to be a further consequence of practice compatibility, which concerns time pressure. While the conventional wisdom of theories that concern innovation partner selection (such as transaction cost economics or dynamic capabilities theories) focus on complementarity of capabilities, compatibility seems to have an important consequence for the actual conduct and destiny of inter-organizational innovation projects under time pressure, as illustrated in Figure 4. To emphasize interaction between innovation speed and practice compatibility, we have labeled typical cases such as fast/slow failures, or fast/safe innovations.

As a fourth, and rather practical observation, we have found that that performance based contracts have a significant impact on the innovation agility. While they may appear to be a more natural fit in software projects, we believe that managers may benefit from exploring ways to adopt these contract types to other contexts. Agile practices with their iterative and piecemeal approach are a natural practice fit for projects governed under these contracts. Figure 4 also takes note of this fit for ideal types.

Finally, at a more abstract and theoretical level, our findings point to some shortcomings of transaction cost economics, open innovation, and dynamic capabilities theories. Transaction cost economics and open innovation both have static perspectives on innovation which focus on selection of resources, where the latter integrates an inter-organizational. Dynamic capabilities framework's grasp on innovation is more process oriented but remains firm centric. We observe a need for a more processual and

inter-organizational perspective for innovation in order to respond to new developments as time pressure on innovation and global competition increases, which in turn promotes inter-organizational innovation.

Conclusions

This study has explored the ways agile practices and contractual forms work in inter-organizational innovation projects. We have explored the effects of time-pressure and practice compatibility of innovation partners in relation to how certain ways of contracting and governance may or may not work. While the results is limited to a case of relatively large size telecommunications company it highlights potential of contract innovations in addressing contemporary challenges. which we see as a potential avenue of future research.

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