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INTERFIRM COOPERATION AND UNCERTAINTY: A STUDY IN THE ICT INDUSTRY

Abstract:

In this empirical study, I take the perspective of the firm in order to explore and understand forming and configuring interfirm cooperation, applying a firm's alliance portfolio approach. The majority of studies have found interfirm cooperation to be crucial for acquiring resources, increasing firms' performance, and building competitive advantages, especially in the most globalized industries, knowledge- and technology-intensive and characterized by a high level of uncertainty. Many studies have explored the impact of alliance portfolio configuration on firms' characteristics. However, little attention has been focused thus far on phenomena of alliance portfolio forming or its impact on portfolio configuration. In order to fill this gap, I applied a mixed method approach, including a multi-site study, and analyzed the phenomena of alliance portfolio forming in 26 ICT firms.

The results indicate that, in the same institutional environment, firms conduct various cooperation strategies and create different alliance portfolios. The major reason for this is the different approaches to uncertainty and trust. The results show that initial trust is a crucial factor influencing firms' ability to take advantage of uncertainty. Moreover, a higher ability to take advantage of uncertainty—namely, trusting instead of applying calculative uncertainty reduction mechanisms in forming interfirm relationships—is a major factor distinguishing the hyper-growth firms from the remaining ordinary analyzed firms. The results contribute to the understanding of approaches to uncertainty and types of trust in forming firms' alliance portfolios as well as understanding factors—other than institutional ones—behind firms' cooperation strategies.

Keywords:

Uncertainty, Interfirm Cooperation, Alliance Portfolio Forming, Trust, ICT Industry

JEL Classification: P13, M10, L24

Introduction

Uncertainty in management theory is usually perceived as a barrier in many aspects of firms' operations. The fundamental purposes of management are connected with reducing uncertainty and transforming the uncertainty into manageable risk (Knight, 1921). On the other hand, the growing number of uncertainty forces is increasingly speeding up firms' reactions to the changes. Managers able to do so act as entrepreneurs — or, even more, as artists (Hatch, Kostera, and Kozminski, 2004)—relying on their intuition and using uncertainty mainly as a source of opportunities. One of the implications of growing uncertainty in firms' environment is growing the meaning of interfirm cooperation (Cyert and March, 1963, Hirsch, 1975, Nohira 1991, Gimeno, 2004), thereby enabling most access to the external resources—namely, network resources (Lavie, 2006, Gulati, 2007). The real "explosion" of alliances, networks, and mergers and acquisitions is the phenomena observed especially in global technology- and knowledge-intensive industries (e.g., ICT, pharmaceutical). Currently, researchers focus not on single interfirm relationships, but rather on firms' alliance portfolios, including multiple simultaneous relationships with various partners (Wassmer, 2008) as firms increasingly engage in a wide array of alliances (Gulati, 1998).

In this study, the alliance portfolio approach to analyzing interfirm relationships has been applied. Alliance[1] portfolio refers to an egocentric network of interfirm ties analyzed from the perspective of the focal firm ("ego" in such a network), following, for example, Lavie (2007). The literature indicates that alliance portfolios have a positive, significant impact on firms' performance (Lavie, 2007, Rothaermel and Deeds, 2006, Shipilov, 2006, Stuart, 2000). Paradoxically, creating interfirm collaboration implies an additional source of uncertainty (Child and Faulkner, 1998, Baum et al, 2005). The primary crucial research questions emerging in this area are related to the formation of firms' alliance portfolio, especially in various contexts (Wassmer, 2008), as well as the ways of dealing with uncertainty and risk.

Existing studies offer only limited insights into the phenomena. In the studies firms' performance is perceived as a main condition prompting firms to conduct different cooperation strategies (Lant, Milliken, and Batra, 1992, Nohria and Gulati, 1996, Audia, Locke, and Smith, 2000, Mezias, Chen, and Murphy, 2002,Fleming and Bromiley, 2003, Baum et al, 2005). Additionally, context of cooperation, especially institutional environment (both formal and informal), is perceived as a major factor influencing firms' alliance creation (Ring and Van de Ven, 1994, Lado et al., 2008, Golonka and Rzadca, 2013). Majority of studies in this area have been conducted on the basis of firms from US or Canada, mainly investment banks, and their formal, strategic alliances.

The contribution of this paper is to investigate in a greater depth how firms form their alliance portfolio that leads to its certain configuration; namely exploration – exploitation ties, as well as weak - strong ties. This study extends previous research taking into account both formal and informal ties, and seeks for other then performance and contextual factors influencing cooperation strategies. Additionally, this study complement existing research by linking firms' alliance portfolio configuration with ways of ties formation, and different types of trust. The phenomenon of forming alliance portfolios based on SME firms (both hyper-growth and ordinary) in the ICT industry in one of the European countries is explored using a mixed method approach.

[1] Alliance in this study, following Contractor and Lorange (2002), refers to any type of interfirm relationship, from ad hoc cooperation to capital joint venture.

The next section of this paper presents the theoretical background as well as the main research questions. The research methods used in the study are then described, and the results of the research are presented. Finally, the findings are discussed.

Theoretical background and research questions

Interfirm cooperation and alliance portfolio

The majority of previous research on interfirm cooperation has focused on single relationships—namely, how and why firms create such ties and how they manage them (Ahuja, 2000, Chung et al., 2000, Gulati, 1998, Spekman et al., 1998, Ireland et al., 2002) as well as how networks of alliances emerge (Ireland et al., 2002, Gulati and Gargiulo, 1999). However, a firm's alliance portfolio consists of multiple various relationships created for various purposes and, consequently, various reasons (Wassmer, 2008).
Exploring the interfirm cooperation phenomena from the perspective of focal firm (in egocentric network of firms) enables us to overcome the shortcomings and limitations in the existing literature (Wessmer, 2008). In the current literature, this approach is increasingly attracting researchers' interest (Deeds and Rothaermel, 2003, Goerzen, 2007, Hoffman, 2007, Heimeriks et al., 2007, Wessmer, 2008).

Major research areas and research gaps

Based on existing theoretical studies, it is possible to distinguish essential research areas for exploring alliance portfolios (e.g., Ventures, 2005, Lavie, 2007, Wessmer, 2008). These issues include the emergence of alliance portfolios, the configuration of alliance portfolios (quantity and quality of ties), and the management of alliance portfolios. Each of these themes requires dedicated research approaches, methods, and analyses (Wessmer, 2008). Most empirical studies focus on the impact of alliance portfolios on the focal firm's performance (Rothaermel, 2001, Rothaermel and Deeds, 2006, Shipilov, 2006, Lavie, 2007, Gulati, 2007, Golonka, 2013, Golonka and Rzadca, 2013).
The results of previous studies show that the size of a firm's alliance portfolio—namely, the quantity of alliances—has a significant, positive impact on a firm's performance and development (Rothaermel, 2001, Lavie, 2007). However, studies also indicate that the quality of alliances (alliance portfolio configuration) plays a crucial role. An extended, differentiated, valuable portfolio consisting of different alliances with various partners is "well equipped" in useful resources (Stuart, 2000, Lavie, 2007). The quality of alliances to a great extent depends on the purposes and methods of acquiring external resources or creating new in a cooperation with a partner. Exploration alliances aim for the exploration, creation of new resources (knowledge, innovation) in cooperation with allies, and experimentation with new opportunities, markets, business models (e.g., expanding into new markets), together with the creation of new complex solutions or R&D projects. Exploitation alliances aim for the use (exploitation) of existing resources owned by allies, such as via the distribution of existing products (Rothaermel and Deeds, 2006), differentiation of alliances based on the strength of relationships relating to capital investments, control and coordination mechanisms, and also the time perspective of alliances (Grannoveter, 1985, Contractor and Lorange, 2002, Gulati, 1998, Rowley et al., 2000). Weak (or loose) alliances, as opposed to strong alliances, are not associated with capital investments, dedicated management or coordination structures, a long

time for the mutual learning of partners' organizations, or the building of relational trust. Thus, weak alliances are less costly in building and managing and do not need a long and complex process of negotiations, planning, setting of the purposes, scope, etc.

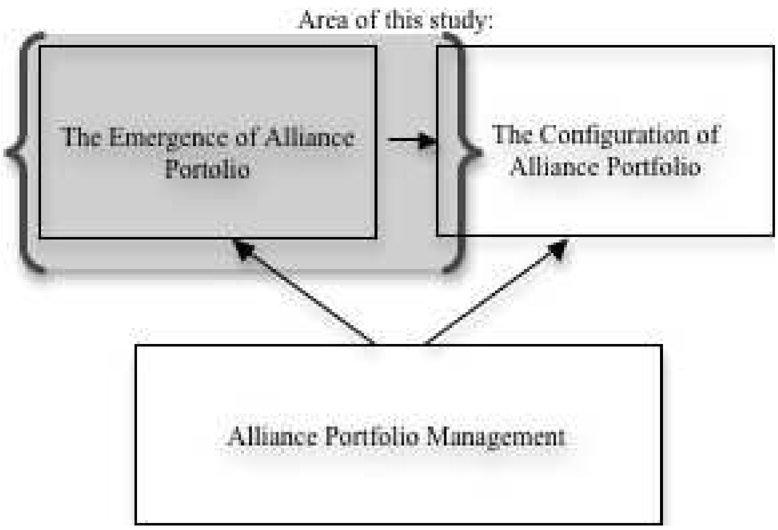
Previous studies show that, in an environment characterized by a high level of uncertainty (e.g., ICT, pharmaceutical, biotechnology industries), firms create significantly more exploration (Dussauge and Garret, 1999), and weak alliances (Duysters and deMan, 2003, Golonka and Rządca, 2013). Through such alliances, firms are able to experiment, share risks, create new ideas and solutions, and conduct ad hoc projects. In high-tech industries, such as the ICT industry, alliances are often created without previous preparation or defined purposes (Duysters and deMan, 2003).

As time to market is a key factor here, in order to survive, firms are not able to engage in the long-distance planning of relationships or negotiations. Instead, firms choose to create weak, short-term alliances based on trial and error. Thus, the time horizon of alliances here means months rather than years (Duysters and deMan, 2003, p. 53). Although the length of an alliance has traditionally been regarded a measure of its success, currently success focuses on the end of the task conducted with a partner. For instance, in Silicon Valley, an alliance is considered to be finished when the partner stops replying to emails (Spekman and Isabella, 2000, Duyesters and deMan, 2003). In particular, most alliances are informal alliances (without formal agreements). Altogether, in high-tech industries, there is not enough time to create long-lasting, strong alliances characterized by highly uncertain return rates of such an investment. For example, during the first ten years of the 21st century (2001–2010), ICT global leaders (e.g., Microsoft, Samsung, IBM, Apple, Google) created significantly more weak alliances (55 percent total), whereas the number of strong alliances has increased by only 0.5 percent (Golonka and Rzadca, 2013).

Numerous examples of global ICT leaders originating from emerging markets prove the crucial meaning of interfirm cooperation for international and intersectoral development. Within a relatively short time, firms such Huawei Technologies, ZTE (from China), and Wipro (from India) became global players offering complex solutions in the ICT industry (Low, 2007). Alliance portfolio has played a significant role in this process (Low, 2007, Wu and Zhao, 2007, Zhang and Filippov, 2010). Creating international alliances and networks allows organizations to develop at a global scale (Palakshappa and Gordon, 2007) and has become a "strategic necessity" today (Beckett, 2005).

Despite the existence of strong empirical evidence on the influence of an alliance portfolio on a firm's performance, international development, and expansion, many firms do not apply this knowledge in creating alliance portfolios. Therefore, Wesmer (2008) Deeds and Rothaermel (2003), and Goerzen, (2007) highlighted the need for further research, especially exploring the emergence or formation as well as the configuration and management of alliance portfolios. Figure 1 presents the major research areas as well as the subject of this study.

Figure 1. Current research areas in alliance portfolios and the focal area of this study.



Research questions

The essential research question that results is: How does an alliance portfolio emerge or, more precisely, how do firms search and select partners for their alliance portfolio? Significant evidence exists to explain the motivations for creating alliances (e.g., Chung et al., 2000, Kogut, 1999, Ahuja, 2000), and the reasons for the emergence of alliance portfolios have been explored (Hoffmann, 2007, Lavie, 2006). One of the major motivations for creating alliance portfolios for firms is coping with uncertainty (Hoffman, 2007, Wassmer, 2008); at the same time, creating alliances—searching for and selecting partners for collaboration (Mitsuhashi, 2002, Moeller, 2010, Wessmer, 2008)—is perceived as an additional source of uncertainty (e.g., Child and Faulkner, 1998, Mitsuhashi, 2002). Thus, the additional research question that emerges relates to ways of dealing with the uncertainty: How do firms cope with uncertainty associated with creating an alliance portfolio? The literature provides evidence on various methods for dealing with such uncertainty, referred to as calculative reduction mechanisms leading to transferring the uncertainty into controllable risk (Knight, 1921, Latusek-Jurczak, 2011). In a minority of studies on this subject, the matter of trust appeared—sometimes as one of the uncertainty-reduction mechanisms and sometimes as a substitute for formal agreements or even an effect of formal agreements. Several researchers have argued that trust is an effect of calculating uncertainty-reduction mechanisms.
However, others have argued that actors might trust despite the uncertainty, as if the situation were not problematic (Sztompka, 1999, Moellering, 2006, Latusek-Jurczak, 2011). In this approach, trust can be perceived as an alternative approach to dealing with uncertainty rather than using calculative uncertainty-reduction mechanisms or an effect of such mechanisms. However, trust per se often seems to be treated marginally in terms of dealing with uncertainty, despite the fact that strong evidence exists to support the importance of trust during each stage of interfirm cooperation (e.g., Bianchi and Saleh, 2008, Child, 2001, Fink and Kraus, 2007, Rampersad et al., 2010, Ventures, 2005). Although trust is a broad and complex phenomenon, in this paper, it is limited to meaning an approach to an uncertainty.

It is worth mentioning that studies often omit the context of interfirm collaboration (e.g., institutional and socio-cultural factors). Institutional factors—both formal and informal—such as national culture (Peng, 2009) can have a significant impact on interfirm collaboration (Hofstede, 1984, Griffith, 2006, Siakas et al., 2010, Furres et al., 2012, Golonka and Rzadca, 2014) as well as trust in interfirm relationships (Doney et al., 1998, Ibrahim and Ribbers, 2009, Monczka et al., 1998, Young-Ybarra and Wiersema, 1999). However, Debufalo (2012) argued that it is necessary to conduct further research in various contexts, especially geographical regions, market sectors, etc.

Methodological approach and method of analysis

Taking into account the explorative nature of this study, I consider the mixed methods approach (Greene, Caracelli, and Graham, 1989, Creswell, Goodchild, and Turner, 1996); however, the most important approach in terms of the aim of the study (asking "how?") is qualitative methods (Uzzi, 1997, Konecki, 2000, Kostera, 2003). I conducted a field analysis at 26 firms from the ICT industry in Poland.

My analysis focused on one industry in order to control for the differences between industries. The ICT industry (including firms offering IT and communication solutions) has been chosen to explore the phenomenon of the emergence of firms' alliance portfolios. ICT is one of the most globalized market industries, wherein interfirm cooperation is a crucial way of competing in order to ensure a competitive advantage. A continually growing number of alliances and networks have been observed in this industry during the last decade, since ICT firms became the vendors of "multiservices"—that is, they started offering complex solutions composed of various products and services (Normann, 1991).

The firms selected for this study varied in terms of the city of origin, size (employment), age, and type of ownership as well as characteristics of top management team (TMT) members in order to minimize the likelihood of the attribution of the cooperation to a particular type of firm (Portes and Sensenbrenner, 1993, Uzzi, 1997). However, all firms except for three larger companies (approximately 700 to 3000 employees) are small and medium enterprises (up to 500 employees). The firms also differ in terms of growth dynamic: Nine of the sampled firms are listed in the Top 50 Fast Technology created by Deloitte (2012), growing revenues by 230 to 2300 percent from 2007 to 2012. These firms are labeled "hyper-growth" firms. The remaining studied firms are labeled "ordinary" firms in this paper (growth from 0 to 100 percent during the same period).

Field methods provided complex data for analyzing alliance portfolio formation and configuration; however, the 26 cases examined have only moderate generalizability. I applied a multi-site study as an appropriate method to compare the phenomena for forming a firm's alliance portfolio in all sites (Yin, 1994, Cassel, 2004, Mills et al., 2009). Quantitative analysis plays a supportive role, especially in comparing alliance portfolio formation in all analyzed firms.

Data collection

In order to collect data, the research has been divided into several stages. In the first phase (pre-study phase), I conducted a pilot study (unstructured interviews and observations) (Spradley, 1979), incorporating elements of the ethnographic method in two firms in order to learn about alliance formation by analyzing reports and documents as well as the process of alliance forming. In the second phase, I conducted a field analysis in analyzed firms. The main part of this phase of the research was the unstructured, moderately directive interviews with

TMTs and, in some cases, selected staff from 26 ICT firms in Poland in 2011–2012. TMTs in such firms are directly involved in major aspects of firms' activities, including forming interfirm relationships (Uzzi, 1997). In several cases, non-participative observations were also conducted. In total, more than 51 hours of interviews (recorded and transcribed) were conducted with 33 persons. Additional detailed data were collected for each firm from secondary data sources (reports, documents, websites, press releases, conferences materials). For each analyzed firm, I also coded the firm's growth, number of alliances, and types of each alliance.
Finally, several consultations with experts (industry experts, researchers, and practitioners) were conducted during the data collection and analysis.

Data analysis

I used grounded theory techniques in order to analyze collected data. In addition, I applied a cross-case analysis in order to compare collected data in distinguishing the analytical process groups of the cases studied (McGuiggan and Lee, 2010). In order to compare alliance portfolio formation in all sites, I also analyzed a configuration of alliance portfolios and firms' characteristics (Mills et al, 2009): firms' growth (as a revenue growth in the last 5 years) and the quantity and quality of alliances in firms' alliance portfolios. In order to analyze firms' alliance portfolio configuration, for each firm I coded the type of all alliances following the method proposed by Lavie (2007), Roethamel and Deeds (2006), and Contractor and Lorange (2002) and grouped them into four categories: exploration alliances, exploitation alliances, weak alliances, and strong alliances. Exploration alliances refer to alliances aimed at creating new knowledge, innovations, and new solutions (e.g., developing R&D projects, building complex solutions, innovating together). Exploitation alliances use existing resources (e.g., selling existing products with partners, using complementary competences and skills from a partner's firm, licensing). Strong alliances refer to long-term relationships, often related to capital investments (especially join ventures) Finally, weak alliances refer to short-term, often ad hoc created alliances (e.g., selling solutions together, licensing, signing marketing agreements).

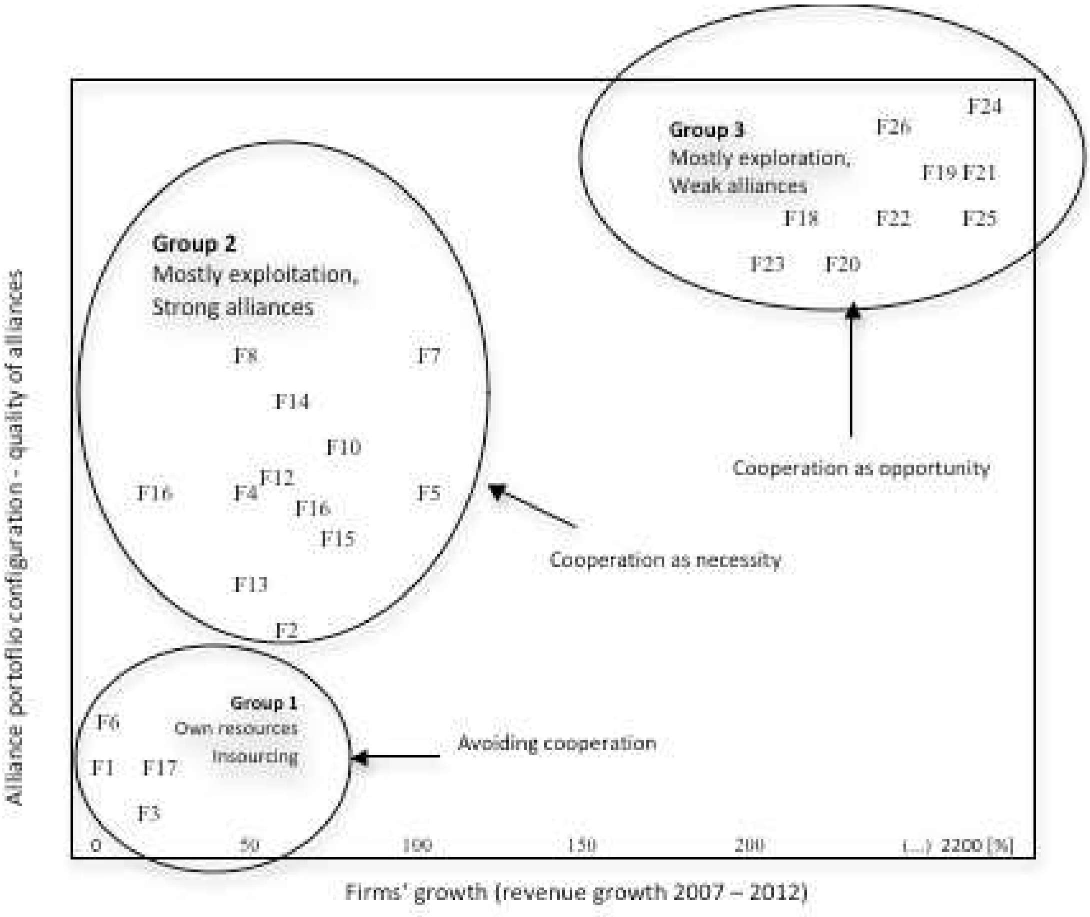
Results

All firms included in the analysis had alliances, and all interviewed TMTs declared that they were aware that interfirm cooperation is a necessity in their industry. However, in the case of 4 firms, interfirm cooperation was literally avoided and limited to very few exploitation alliances (mainly licensing and the outsourcing of complementary services like accounting). Although an alliance portfolio—namely, the portfolio of numerous simultaneous alliances—should be created as an effect of informed, conscious planned development of the organization (Hoffmann, 2007, Lavie, 2008), in all analyzed firms, their alliance portfolios consisted of single alliances that did not constitute a consistent portfolio managed as a whole. The alliances formed more or less a casual set of relationships. This result supports previous research on managing multiple alliances (Doz and Hamel, 1998, Bamford and Ernst, 2002).

Alliance portfolio configuration

As a result of the analysis of the collected data, I found three groups of firms in terms of alliance portfolio configuration. Figure 2 shows the results of the analysis of firms in terms of their growth and alliance portfolio characteristics, highlighting the portfolios' configurational aspects.

Figure 2. Firms' growth and alliance portfolio configuration (F1 to F26 codes of the firms in the sample)



TMT approach to cooperation

The approach to interfirm cooperation in firms from Group 1 (avoiding cooperation) is reflected in the comment of one interviewed manager:

> *"We cooperate with partners, but not [efforts] involved with our core business. This is what we do alone. Everything that is outside—call center, accounting, software licensing like Microsoft—yes, we use partners."* [F1]

The major reason for avoiding cooperation seems to be in most cases a strong corporate culture and a fear of a leak of information or knowledge from the firm. One TMT member claimed:

> *"We do and want to do everything alone. We don't want partnering because of our work culture and knowledge sharing. We have created our work culture based on knowledge sharing, strong teams working together, in the open spaces in a nice office, which costs much—but is worth it, because thanks to it these people feel like team and are able to conduct projects. We don't want our knowledge to leak out our firm."* [F17]

Similarly, another TMT member remarked:

> *"The firm always had a tendency to acquire others, even those who outsourced or realized outsourcing; there was even a moment when we thought about our own production of (name of the product). We were always going against the trends, even mass printing, we bought a machine ... because it was cheaper for us. But even if not, there is a concern about the leak of information, on quite an informal level...."* [F3]

In one firm only TMT claimed to avoid cooperation because of past negative experiences, which was an exception in the analyzed sample.

The meaning of cooperation in the remaining firms turned out to be much more important, despite remarkable differences between the approach to cooperation in firms from Groups 2 and 3. In firms from Group 2 (cooperation as necessity), cooperation is limited to acquiring the lacking, complementary resources and competences, especially skills and knowledge in particular projects. These firms' alliance portfolios are characterized by a relatively limited number of alliances with partners, mostly exploitative and strong, long-term alliances based on relational trust (built gradually during cooperation), and not related to the firms' core business.

For firms from Group 3 (hyper-growth firms, cooperation as opportunity), cooperation seems to be an essential part of their strategy and development, aimed at creating new knowledge, solutions, or innovations as well as creating value. Thus, the majority of alliances are explorative in nature. Most are weak alliances, often ad hoc and informal agreements (without a formal contract). A significant part of Group 3 firms' alliance portfolios are alliances with foreign partners whereas those in Group 2 alliances with foreign firms are rather the exception than a rule.

Differences in approach to cooperation are reflected in the following opinions.

> *"In case of situation—I have a project and our resources are limited or insufficient, so I have some firms, which I cooperate with, specializing in that, then I take them."* [F12] Group 2
> *"I prefer to have reliable partner whom I can call and say that tomorrow [the partner] has to do something with me, than somebody who will haggle with me."* [F7] Group 2
> *"It is like that, we were and are opportunistic, which means open for cooperation and opportunities. I compare it sometimes that we act as the river; when the level of water increases, the river has incredibly huge possibilities in finding a place to flood, and this is it exactly."* [F25] Group 3
> *"We don't need to be owners of everything, we can start cooperating with someone; it is not necessary to own everything in order to do something interesting. So this is our basic assumption."* [F23] Group 3

The firms' alliance portfolio analysis results seem to resonate with previous findings from studies conducted in high-tech industries (e.g., Rowley et al., 2000, Rothaermel and Deeds, 2006, Lavie, 2007, Golonka and Rzadca, 2013). ICT industry firms with diverse alliance portfolios including well-equipped allies creating more exploration and weak than exploitation and strong alliances have remarkably improved chances for better performance and also exceptionally high growth. Moreover, characteristics of the configuration of alliance portfolios from the analyzed hyper-growth firms seem to be consistent with the configuration of global ICT leaders' alliance portfolios (Golonka and Rzadca, 2013).

Partner searches and selections

Partner searches and selections are the major elements in the formation of interfirm cooperation (Ventures, 2005, Solesvik and Westhead, 2010, Moeller, 2010). An analysis of interviews and observations in cooperating firms has led to a distinction of methods for searching for and selecting partners. In two cases (biggest firms from Group 2), a formal or semi-formal process exists for searching and selecting mostly distributors, as realized by a sourcing department. In the remaining cases, the process is not formal, and no organizational structures (department, manager, etc.) support such a process.

I found that analyzed firms use several ways to search and select partners for cooperation. Again, differences in this process exist in firms from Group 2 and Group 3. In Group 2, predominantly relying on existing alliances, often connected with personal relationships, is only one way of searching for partners. The second most often chosen way is the use of the recommendations from existing partners.

> "*Always through some acquaintances. Somebody has to know us because in Poland there is low level of trust in general, so no one establishes cooperation without it. It always has to be someone who has known us for several years and is not afraid of us, and we have to know him for several years and not to be afraid of him.*" [F15]
>
> *"If we don't have a partner, we first of all search relationally, that means through personal relationships at the highest possible level. We compose and see if the relationships allow us to work with the partners. If not, we definitely don't do it because we are afraid of that*." [F12]

Partner selection is to a great extent related to methods for searching for partners. Partner selection criteria are related to personal or relational aspects of allies. These aspects are regarded as more important than even market factors (e.g., cost or possible revenues). In most cases, partners in alliance portfolios are selected from existing ties—above all, from friends and acquaintances or based on recommendations (in several cases, possible partners' reputation).

> *"Here it is more about working with people, not with firms."* [F10]

In this group of firms, reducing uncertainty is the major aim of the process of searching and selecting partners for cooperation. Sometimes in the case of the loss of personal relationships, cooperation can even be renounced. The major reasons for avoiding cooperation with "strangers" from the market are a lack of trust and a fear of risk.

This is also related to the position of the firm when searching for partners. Firms from Group 2 seek partners mostly reactively—that is, as a result of necessity caused by the environment (customers' expectations, existing partner's offer). In Group 3, firms proactively seek partners using what one manager defined as "all available sources," including via internet search engines, phone calls to potential partners, and participation in conferences, industry events, dedicated partner programs, and associations, including those abroad. In all firms, both TMT members and employees are responsible for searching for partners for possible cooperation. In the majority of cases, prospering partners are not verified before cooperation. As some managers mentioned, they "believe in the positive outcome of the cooperation."

> *"One of the sources is Google. I have personally found 2 or 3 firms we cooperate with, and this cooperation is very successful."* [F21]
> *"We meet in the case of conferences. We meet, talk about different things and ventures and so on, and it appears that—ah! We can have some common business, and it starts maybe this way, maybe another way…."* [F23]
> *"We just search for them and find them. We brainstorm and think about what sector is the most interesting to us, also for sales of course, but where we would like to appear, where our target is, and we try to find a way to start cooperation and give something from us, so it would be worthwhile for both parties. This is in fact the search efforts from our side."* [F18]
> *"We search firms that we can cooperate with nicely because they are not determined to achieve immediate benefits, to sell something immediately, but they treat this cooperation as a development of their offer, in the long term; we spin in tandem and we believe that they will develop okay and bring business to us, and they believe that we will develop okay and bring business to them."* [F23]

In these firms, creating value is the main driver for searching for and selecting partners, and partner selection is subordinated to the vision or idea of the directions of the firms' development. These firms often cooperate even with direct competitors, focusing on the possible positive effects of such cooperation. Partners' resources and competencies as well as the possibilities of creating something valuable are the major drivers of ally selection.

> *"I would say, first of all, we risk. It is impossible to verify a partner. It wastes time and money."* [F26]
> *"We risk. Competences of firms are crucial for deciding on cooperation."* [F24]
> *"I don't know why I would have to say that risk is higher in the case of cooperation with a stranger than with someone recommended, no way. Sometimes I have an impression that in the latter case the risk is even lower because, from the selling point of view, in the situation in which I am recommended and in the situation when I just have to convince someone who doesn't know anything about me, it has no positive connotation built around me or my firm. It is harder, and I have to try a bit more."* [F21]

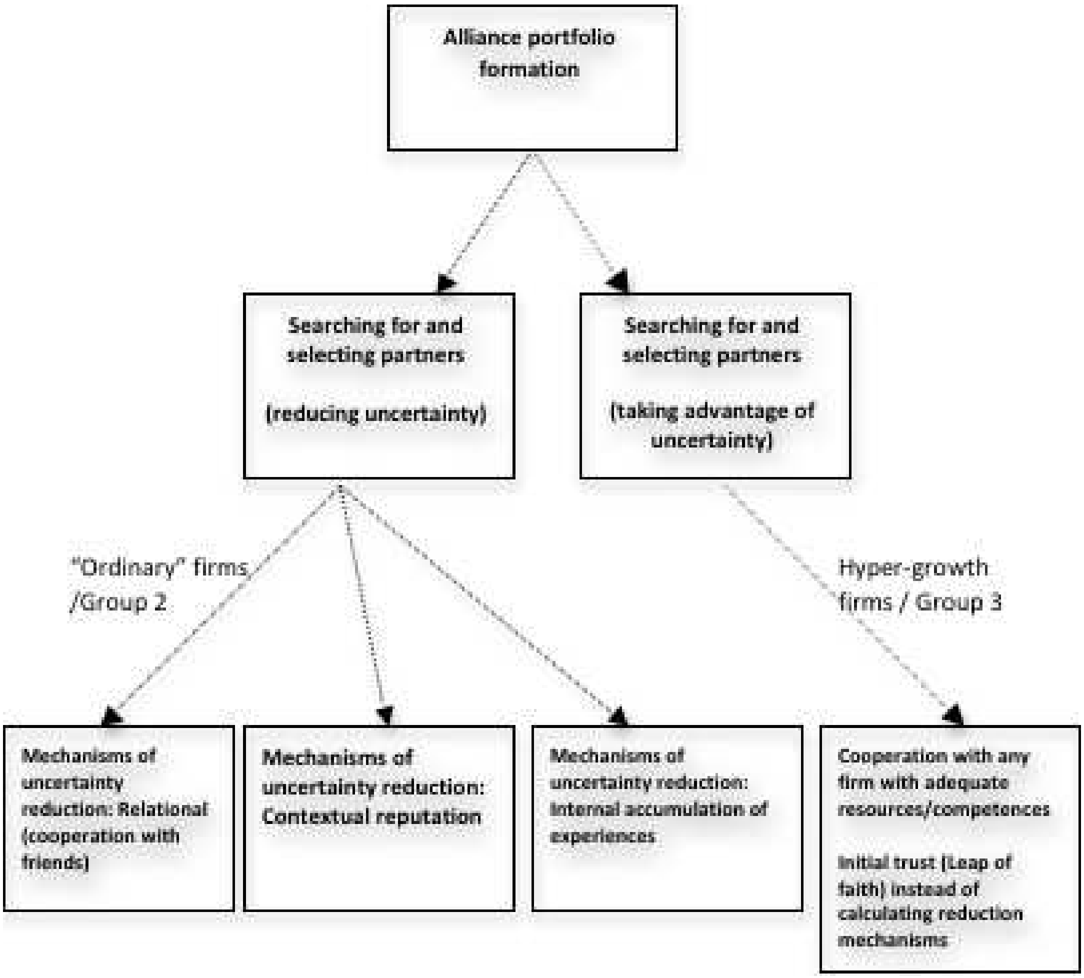
The following quote represent the approach to the risk of leaked knowledge in this group. Such opinions also show that the main concern is creating value for the customer, not reducing relational uncertainty.

> *"First of all, we have to put it clearly and honestly. There is nothing like full protection against the stealing of knowledge, technology, or relations, no way. More the cooperation with the customer and what we create should be a guarantee that this cooperation with the partner will continue rather than the billions of cooperation contracts with high contractual penalties in the case of breaking the conditions. Are we*

able to defend ourselves from stealing competencies? It's not possible to act seeing everything in such a closed, locked way. Ideas are being made public here, after three months...." [F21]

The risk mentioned in interviews actually refers to approaches to uncertainty; risk probabilities of future events are known, but uncertainty is not (Knight, 1921). The analyzed firms do not calculate options or possible scenarios; they do not apply calculative methods of uncertainty reduction. The TMTs of these firms *believe* in future positive outcomes of cooperation and "*just do it*." This demonstrates that the ways used for coping with uncertainty are suspension mechanisms or leaps of faith (Moellering, 2006) instead of uncertainty reduction mechanisms.
Firms from Group 2 seem to focus on reducing uncertainty related to interfirm cooperation using uncertainty-reduction mechanisms (Mithusashi, 2002); these include searching for relational partners among friends and acquaintances, recommendations, and cumulating experiences; relying on existing partners and personal relationships; and exploring contextual reputations. Figure 3 depicts the methods of alliance portfolio formed in "ordinary" firms (reducing uncertainty) and hyper-growth firms (accepting uncertainty, trusting instead of applying uncertainty-reduction mechanisms).

Figure 3. Alliance portfolio formation: Differences between ordinary and hyper-growth firms in searching for and selecting partners for cooperation.



Discussion and conclusions

Summary of research findings

The main purpose of this study was to explore and understand how firms' alliance portfolios emerge, particularly in terms of how firms form their alliance portfolios while achieving certain configurations. Based on the empirical investigation, I distinguished the following considerations as essential factors in forming alliance portfolios in firms that affect cooperation: TMTs' approach to cooperation, partner searches and selections, and categories related to such searches and selection—namely, the major orientation and position, approach to risk, and trust (both initial and relational trust). I also analyzed firms' alliance portfolio configuration. The results indicated two major ways to form alliance portfolios, resulting in two different configurational settings (Group 2 and Group 3; Group 1 includes firms avoiding interfirm cooperation).

One way is related to reducing uncertainty connected with creating alliances (Group 2). Firms from this group apply *uncertainty-reduction mechanisms*—namely, relational mechanisms (collaboration with relatives and friends only), contextual mechanisms (relying on recommendations and reputation), and internal mechanisms, such as collaborating with previous partners and accumulating experiences (establishing a negotiable environment). These partner-searching and -selection methods are consistent with the results of previous studies focused on single alliances (e.g., Gulati and Gargiulo, 1999, Larson, 1992, Mithusashi, 2002, Podolny, 1994, Simonin, 1997, Uzzi, 1996).

Firms relying on existing, strong, and long-term relationships search for partners based primarily on personal relationships or recommendations. The firms focus on *relational criteria* while selecting partners for cooperation, treating cooperation as a *necessity*. They represent *reactive* positions in creating cooperation, searching for partners as necessary or waiting for partners' initiative. The main factor for avoiding cooperation is the fear of risk (thus, firms from Group 1 entirely avoid cooperation) and the lack of trust. This results in a limited number of alliances in an alliance portfolio; they are mostly strong alliances whose purpose is exploitation. Alliance portfolios are usually limited to trusted partners—namely, acquaintances and recommended allies. In this situation, the existing (mostly personal) relationships imply the directions of firms' development.

Another approach to forming alliance portfolios is quite different (Group 3). Firms from this group seem to *accept or even use the uncertainty* related to cooperation. The firms focus mostly on *value creation*, using *task-related criteria* in partner selection. The cooperation development seems to be a *proactive* and constant process. Creating alliances seem to be directly connected with an idea or vision of a firm's development as well as the major part of the firm's strategy. However, even in the case of these firms, the alliance portfolio is not treated and managed as a whole, but rather emerge while forming numerous single connections.

In these firms, cooperation is treated as an *opportunity* for creating something new, interesting, innovative, and valuable for customers. TMTs in the majority of firms from this group declared their faith in the positive effects of cooperation. The future effects of cooperation as well as the possibilities of firms' development are the most important factors for managers of these firms. The firms tend to form collaborative relationships with any firm, individual, institution (universities, associations, government agencies), and even competitor with the appropriate resources (or sometimes just the will and an idea).

Access to network resources and exploration is the main focus of their interest. Instead of reducing uncertainty, managers trust that the collaboration will lead to something interesting and useful in the future. In this case, trust can have a crucial meaning in several dimensions—namely, trusting unknown partners, that the partners' firm will develop in an appropriate direction, and that the collaboration will lead to positive effects. In such cases, the trust seems to be perceived as a faster, more effective way for generating possibilities and possible benefits, not threats. The approach to forming alliance portfolios can be described as cooperation with any organization (firm, university, individual, government agency, spin-off enterprises, etc.) that has the will to cooperate and the resources or competences necessary. The guarantee of cooperation is a possible effect of the cooperation and provides value for the customers.

There are also appears to be important distinguishing types of trust related to interfirm cooperation. TMTs of firms from Group 2 show a high level of initial trust while firms from Group 3 predominantly rely on *relational trust* (built gradually during long-term cooperation). The *initial trust* seems to be much more important in the process of forming alliance portfolios in analyzed firms. This results in creating diverse alliances with strangers, creating mostly weak, explorative alliances. Moreover, this kind of configuration of alliance portfolio results in an extraordinary growth of the firms (hyper growth) and is consistent with configurational characteristics of global ICT leaders.

Table 1 summarizes major differences between firms' formation of alliance portfolios.

Table 1. Two major approaches to alliance portfolio formation in analyzed firms

Group 2: Ordinary firms	**Alliance portfolio formation**	**Group 3: Hyper-growth firms**
Limited number of alliances, dominance of exploitation and strong alliances	Alliance portfolio configuration	Extended alliance portfolio, dominance of exploration, and weak alliances
Necessity	TMT approach to cooperation	Opportunity
Existing relationships (mostly personal), recommendations	Partners searching	All available sources
Relational criteria: existing partners, friends, relatives; avoiding cooperation with strangers	Partners selecting	Task-related criteria: resources and competences, possibilities of creating value, cooperation with strangers and competitors
Reduction of uncertainty	*Major orientation*	Value creation
Reactive	*Major position*	Proactive

Fear of risk	*Risk*	Focus on possible effects of cooperation
Initial trust – low. Most important relational trust, built during long-term cooperation	*Trust*	Initial trust – high, suspension mechanisms ("leap of faith")

Theoretical implications

In the cultural context characterized by high uncertainty avoidance (Hofstede, 1984) and low generalized trust (Czapinski and Panek, 2011), hyper-growth ICT firms seem to have an exceptional ability to trust, particularly in terms of initial trust. In the same institutional context, firms use different ways to form cooperation, creating different alliance portfolios in terms of their configuration. This study implies that the meaning of institutional context might be much less important than the perception of this context. This is also connected to trust as a natural attitude to the environment and when dealing with uncertainty (Moellering, 2006, follow Giddens, 1993, Holstein and Gubrium, 1994). It seems that in forming alliance portfolios, *initial trust* instead of costly, restrictive mechanisms of uncertainty reduction as well as building relational trust seems to be the crucial factor leading to interfirm cooperation and creating diverse, valuable alliance portfolios while increasing firms' growth potential.

In a highly uncertain environment, there is a need for "quick trust." This resonates with Sprenger's (2009) opinion that trust does not have to be worked out during long positive experiences; such trust is not necessary or even useful for the future. The most creative cooperation is based on quick trust, enabling firms to adjust quickly to the changing, dynamic environment (Sprenger, 2004).

This study also confirms the meaning of suspension mechanisms, referred to as a leap of faith when creating interfirm relationships as trust is a mixture of knowledge and faith in the future positive actions of others (Tillmar and Lindkvist, 2005). Moellering (2006) calls this process the "just do it" mechanism.

Another concept related to initial trust is "swift trust" (Meyerson et al., 1994). Swift trust is useful in temporary groups and projects and can occur when people are concerned more with doing (tasks) than relating (relational aspects of cooperation). Doing and proactiveness are also a condition of the existence of trust (Sztopmka, 1999, 2007). According to Sztompka (2007), trust is expressed in actions, not a passive attitude to the environment.

Different approaches to cooperation, uncertainty, and trust can lead to different abilities to cope with uncertainty, focusing on reducing uncertainty or, the opposite, taking advantage of uncertainty. Some firms focus on relational aspects of cooperation and reducing uncertainty connected with cooperation; this approach results in creating cooperation with reliable, trusty partners. At the same time, existing relationships determine the directions of firms' development and the possibilities of their growth. Other firms concentrate on their development, creating value, cooperating with any firm possessing adequate resources or competences, and proactively forming alliances with strangers from the market.

Different approaches to trust also seem to support bounding and bridging social capital concepts derived from the trust concept (Putnam, 1993). Bounding social capital relates to reducing uncertainty and cooperation within closed social groups (families, friends, relatives) and has a negative impact on market development as “the ties that bind may also turn into ties that blind” (Powell and Smith-Doerr, 1994, p. 393), thereby reducing development opportunities to possibilities created by existing ties, limited market activity, and a “race to the bottom” (Schuller et al., 2000, Field, 2003). Meanwhile bridging social capital, perceived to be positive from the perspective of economic development, allows for the creation of ties within broader social groups, including strangers from the market.

Limitations and further research directions

The first limitation recognizes that this study is limited to the investigation of forming and configuring alliance portfolios in ICT firms in one country. Additional research should be taken to compare the phenomena in other settings, countries, and various institutional or industrial contexts. Second, the number of firms is limited to 26. This is enough to understand how alliance portfolios emerge, but further studies covering larger samples and incorporating quantitative methods can compare phenomena at a larger scale. Third, this study is limited to addressing questions of how, but it can serve as a basis for further studies, answering questions about why the perception of the context, uncertainty, and trust is so different among firms and managers. Finally, another interesting issue that emerged based on the findings of this study is the propensity of the initial trust of firms and TMTs. Is it also possible that entire organizations have different propensities to trust and abilities to take advantage of uncertainty than TMT members? Further research should investigate this using appropriate—especially quantitative—methods.

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