

Influential Capabilities and Their Development in a Project Business¹: Results of an Estonian Survey²

Mait Rungi

Tallinn University of Technology

Ehitajate tee 5, 19086 Tallinn, Estonia

Phone: +372 6203 963, e-mail: mait.rungi@ttu.ee

Abstract

Prior literature does not describe adequately the value of dynamic capabilities in a project business and does not follow their evolution, there also exist several contradictions – the aim is to clarify these issues in small- and medium sized companies in Eastern Europe. A descriptive empirical work was conducted to track the capabilities and their development, for which the survey was performed. The best capabilities are worth imitating in a capability development and the worst capabilities need to be further investigated to decide how to improve them. Capabilities do not get better with time, as strong remains strong and weak remains weak, exploitation and exploration capabilities are evaluated at an equal level. Project related capabilities are more significant to profit than business capabilities. Generally, companies' age makes the project and project portfolio capabilities worse.

JEL classification codes: M10, O22, O32

Keywords: dynamic capabilities development, project management, project portfolio management

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¹ A project can be defined in multiple ways, but usually the temporariness of the process and uniqueness of the result are emphasized. For example, according to the Project Management Institute standard, a project is seen as a "temporary endeavor undertaken to create a unique product, service, or result" (PMBOK, 2008: 1) and a project portfolio as "a collection of projects" (PMBOK, 2008, p. 8; Artto et al., 2001, p. 24).

² Extended report is available on demand.

1. Introduction

Dynamic capabilities are a common term in business language of the last decade to cover dynamic change aspects for abilities, skills, and competences. It is not enough to have an idea that is easy to imitate, as you must also be able to reorganize and coordinate the company's abilities, skills and competences all the time (Teece et al., 1997) in order to implement an idea quickly and successfully. However, capabilities are not investigated enough, nor it is easily applicable phenomenon in practice. The idea is not to create a theory, but find out for benchmarking what capabilities project companies use at what stage.

This paper provides a descriptive overview of the best and worst dynamic capabilities and their development in the field of project management (PM) and project portfolio management (PPM). Project related activities are very important, because projectification of industries is expanding constantly (Söderlund, 2005, pp. 451–452) and solely small and medium size enterprises (SMEs) spend “a third of their turnover on projects” (Turner et al., 2009, p. 285). Whereas PPM has been traditionally popular in large companies with big portfolios, it is becoming more practical in SMEs as well. It is increasingly evident that the size of the average portfolio varies by industry and the number of simultaneous projects can easily escalate in SMEs in high-growth industries, such as information and communication technology (ICT) companies, and may remain low in large companies in traditional industries, such as shipyards. Dynamic capabilities are seen as fundamental elements of every company (Zook, 2007). A project-orientation setting is considered suitable for dynamic capabilities³, as the project's main vehicle is to carry out new product development and benchmarking. Justification for PM and PPM's dynamic capabilities are given (Biedenbach, 2007, p. 3, 19, 21), but PM and PPM capabilities are seldom researched (Melkonian & Picq, 2011, p. 455) – this is a research challenge, therefore a descriptive overview is considered important⁴.

Zook (2007) points out that only “5 to 10”, out of all capabilities, in a company are the core ones. For start-ups or incumbents it is useful to know whether they match others in the sense of core capabilities and what capabilities to develop, since not all capabilities have an equal impact (Fahy & Smithee, 1999). Companies are getting more vulnerable, as the new product development (NPD) cycle is getting shorter (Menon et al., 2002) and business models are standardized (DiMaggio & Powell, 1983), this provides a base for benchmarking the others' best capabilities. Companies need to imitate or innovate all the time (Ofek & Turut, 2008). The level to how much companies imitate does not change by a company's age (Zahra et al., 2006, p. 939). Another shift is on its way, as it is not enough to “deliver the best product”, but “to deliver the best experience” (Adner, 2012). If most circumstances are the same or similar, it makes it hard to differentiate and find a competitive advantage – every act of guidance in this field is beneficial for companies. Ethiraj et al. (2005, p. 43) recommends that in circumstances of “scarce managerial resources, it is useful for firms first to identify the capabilities that provide the highest marginal returns to performance and then direct the bulk of its resources to acquiring them”. These types of capabilities are defined here as influential capabilities. Guidance is especially important in the field of PM with very high

³ Zahra et al. (2006, p. 942) argue that the gain from dynamic capabilities is greater in modern project-oriented companies. Similarly, Killen and Hunt (2010, p. 18) find the dynamic capabilities theory to be an appropriate research setting for PPM.

⁴ Descriptive research is considered “enormously important” by “creating an early and a broad understanding” (Brown and Eisenhardt, 1995, p. 353).

failure rates, as more than 50% of projects fail (Archer & Ghasemzadeh, 2004, p. 239). Another reason for selecting and/or dumping others' best/worst practices is that "building ... of dynamic capabilities are costly" (Zahra et al., 2006, p. 925). There is also a threat with best practices, as picking just a few best approaches might not work, and there might be a need to copy the full capability configuration. This configuration may change by company's age. Best practice research is by its nature post hoc (Zahra et al., 2006, p. 923), this time deliberately, since there is a dual focus – what are the best practices and how are they built. Projects are in the main focus, but non-project companies are also involved in the study – to compare and contrast opposites in order to see the benefits from projectification. A practitioner orientation dominates in PM research (Turner, 2008), which matches well with the best practices approach.

Topicality of subject is guaranteed by increased projectification, high failure rate of projects, scarce resources, fundamental nature of capabilities and by the need for benchmarking from others' best practices. A problem is seen in that there is not enough empirical evidence available regarding capabilities, including PM and PPM ones.

Creswell (2003, pp. 106–107) recommends to "ask one or two central questions", this research addresses the identification of the best and worst practices, and their evolvement through time by posing research questions for a descriptive overview:

- Which capabilities are worth being developed?
- Which capabilities are beneficial for young and incumbent companies?

Most research is concentrated on large countries (Tienari & Thomas, 2006, pp. 373–374), not on SMEs (Zahra et al., 2006, p. 919); or on certain industries (e.g. biotechnology (Baum et al., 2000), ICT (Lavie, 2007)) – this research also concentrates on SMEs and other industries in a fast developing small North-European country – Estonia. The Estonian population is 1.340 million in 2012 (Statistics Estonia, 2012). Estonian labour costs are rather low, and the average gross salary per month varies between 749-918 EUR in 2011 (Statistics Estonia, 2011). Due to the small size of the country, the target group of research was not limited by any criteria.

This research is important to reveal what capabilities are important to consider at different time moments in a company's life, knowing this companies can follow them as best practices. Special emphasis is put on project capabilities. Project management has received a lot of attention, but it is not known whether companies should consider them more than business capabilities to get better results. The author's aim is to construct causal models between best practices and outcome – profit – and test them in practice.

This paper is structured as follows: first, a literature review about the project capabilities and their development through time is conducted, which is thereafter followed by methodological issues, especially concerning aspects about the survey and sample used. Then, the results of the study and empirical data analysis are provided. Finally, discussion and conclusion are proposed, together with limitations to be taken into account.

2. Literature Review

2.1. Project Capabilities

Dynamic capabilities deal with how companies are able to adapt its abilities with a changing environment (Teece et al., 1997, p. 515). These abilities may cover all types of functional activities in a company (Collis, 1994, p. 145). Abilities exist in the form of skills, resources, competences (Teece et al., 1997, p. 515), and culture (Leonard-Barton, 1992, p. 113). “Lack of skills” is one of the big obstacles (Cooper, 1999, p. 120), therefore capabilities should not be underestimated. Some differentiate resources and capabilities, where the latter deploys the former (Amit & Schoemaker, 1993, p. 35) or capabilities become a part of resources (Barney, 1991, p. 101). Unfortunately, decades of studying capabilities has not reached a clear definition, therefore skills, resources and competences are seen here as capabilities. Söderlund (2005, p. 453, 459) argues that project capabilities may differ from traditional capabilities, as they cover “the knowledge, experience and skills necessary to perform pre-bid, bid, project and post-project activities” (Davies & Hobday, 2005, p. 62). In general, project capabilities are less researched.

On the basis of March’s (1991, p. 71) ideas, dynamic capabilities can be divided into exploration and exploitation capabilities, where the exploration type of capabilities are: “search, ..., risk taking, experimentation, ..., discovery, innovation”; and the exploitation type of capabilities are: “..., production, efficiency, selection, implementation, execution”. Exploitation is found to be the main source of earnings (Rungi & Kolk, 2011; Regnér, 2003; Levinthal & Myatt, 1994, p. 47). Exploration orientation first increases the financial performance, but while exploration orientation grows and starts to dominate, the financial performance is reducing (Uotila et al., 2009, p. 221). Low technological dynamism is one of the underlying reasons “to completely focus on exploitation” (ibid.). Exploitation is also related with problems, such as “organizational myopia”, “competency traps” (He & Wong, 2004, p. 482), inability to adapt (Bierly et al., 2009, pp. 484–485) etc. Similarly, projects have also activities related to exploration and exploitation. Brady and Davies (2004, p. 1602) argue that project based learning starts with explorative capabilities. Google case study showed that after the initial explorative ‘sensing business opportunity’ capability, further capabilities are located on the exploitive side (finding funds, networking, internet services etc.) and returns after ‘quality management’ is established (Rungi & Kolk, 2011). A similar prediction can be made on the basis of March’s (1991, p. 71) definitions for exploration and exploitation – after discovery you need to start producing and become efficient, thus to find out the current situation in Eastern-Europe several hypothesis can be posed:

Hypothesis 1: Companies report better results in exploitation oriented capabilities than exploration oriented capabilities.

Capabilities are considered one of the primary sources for profit (Colotla et al., 2003, p. 1186). Profit maximization is one of the PPM aims (Cooper et al., 1999, p. 29). For example, Cooper (2005, pp. 281–282) said that, “44 percent of new product projects fail to meet their profit objectives”. Testing the capabilities influence on profit (as the most traditional goal of a company) is analysed in this research.

There exist many capability divisions, they are similar in nature, but differ in details:

- (1) business; (2) project, and (3) technological (Söderlund, 2005, p. 457);
- (1) strategic; (2) functional, (3) project (Davies & Brady, 2000), and (4) people (Bredin, 2008, p. 571);
- (1) client-specific capabilities and (2) project management/technical capabilities (Ethiraj et al., 2005, p. 26).

Project capabilities are project related functional activities and/or process related activities (Brady & Davies, 2004, p. 1603). Rungi and Kolk (2011) have found a list of general/business, PM and PPM specific capabilities in the ICT company, Google, and they are taken as a base in this research. Many independently found capabilities from Rungi and Kolk (2011) are in line with findings from others. For example, internationalisation and cross-project teams, as success factors of PM, were included in the business capabilities section (Cooper, 1999: 118). Partnering is described by Hagedoorn (1993). Project generation, organising, leadership and teamwork are proposed by Söderlund (2005, pp. 465–466, 475). Exploiting business opportunities from Bredin (2008, p. 569) and so on.

2.2. Capability Development Through Time

The aim is to observe how capabilities change by the age of the company⁵. Age differs from lifecycle, since some companies may fold/end up before reaching the mature stage. Mapping of stages is still a pioneering area. Furthermore, a company has methods for prolonging the amount of time spent in a certain stage (Lester et al., 2003, p. 340).

While Collis (1994, p. 146) emphasises that capabilities “are built rather than bought”, Killen and Hunt (2010, p. 18) say that PPM capabilities are “easy to copy and acquire”. In addition to capability building, Makadok (2001) also proposes resource-picking. During its lifecycle⁶, capability may transform to other shapes to reach higher efficiency or for entering other markets, capability may also combine with other capabilities and create a new capability (Helfat & Peteraf, 2003). The question of which method becomes possible is up for earlier decision – capability development is path dependent (Eisenhardt & Martin, 2000, p. 1105) with possible success traps (Collis, 1994, p. 145; Teece et al, 1997), which promotes a tendency towards proactive capability development (Draulans et al., 2003). First the capability senses opportunity then seizes it and finally reconfigures assets “to maintain competitiveness” (Teece, 2007, p. 1319). This chain has also been looked at in the context of PPM by Petit and Hobbs (2010).

Learning is an important aspect of capability development; Teece et al. (1997) see learning as a main source for capabilities. Learning can occur in many additional ways, for example, Helfat and Peteraf (2003, p. 1006) describe the recombination capability development technique as organizational learning by drawing a parallel with knowledge recombining. In project management, Brady and Davies (2004, p. 1601) describe project-led⁷

⁵ According to Forbes (2011), company life expectancy has fallen to 15 years and keeps falling, therefore the age of companies were equally divided into three periods: age 1-5 years as the growth stage, age 6-10 years as maturity, and age 10+ years as decline.

⁶ Capability becomes capability when it has reached some threshold of “minimum level of functionality that permits repeated, reliable performance of an activity” (Helfat & Peteraf, 2003, p. 999).

⁷ Project-led (project-to-organization) learning has similarities with the traditional organizational learning theory approach: individual → group → organization (Crossan et al., 1999, p. 525).

and business-led learning alternatives to build dynamic capability. Learning is a lifelong process⁸ and it is needed for both exploration and exploitation capabilities (Gupta et al., 2006, p. 694; Bierly et al., 2009, p. 482), “learning should stop when the incremental costs of pursuing it further begin to exceed the incremental benefits derived from it” (Winter, 2000, p. 986). It can be expected that learning should take place continuously, but definitely in the beginning.

Project capabilities can be developed by a proactive innovative approach (Brady & Davies, 2004, p. 1608), which leads to first mover/pioneer advantages; or by benchmarking/imitating others to gain fast second advantages (Markides & Geroski, 2005; Womack et al., 1990). Söderlund (2005, p. 469, 471) names it in a project context as interacting “expansion” and “shifting focus”. Depending on chosen focus, it may change the importance of learning at different stages of company’s life.

This research is interested in which capabilities prevail at what stage. There are only a very few earlier sources which pay attention to this type of dynamics (e.g. Rungi & Kolk, 2011). While investigating a large ICT company, Rungi and Kolk (2011) discovered that market dynamic phases (emergence, take-off, growth) require certain capabilities and their order of appearance⁹ has some path dependencies.

Capabilities development takes a “long period of time” (Wang & Ahmed, 2007, p. 42). Helfat and Peteraf (2003) have noted that new capabilities can be developed by recombining existing capabilities, i.e. a larger capability portfolio gives more options for recombination – development of capabilities is incrementally cumulative. Similarly, “learning is cumulative” (Cohen & Levinthal, 1990, p. 131) and “older firms” have more products (Rothaermel & Deeds, 2004, p. 210). Recombination also “can minimize redundancies” and permits strategic alignment (Zahra et al., 2006, p. 930). In addition usually “capabilities strengthen with use” (Zahra et al., 2006, p. 928), but can also decay (Easterby-Smith, 2009, p. S4).

Incumbent companies improvise less, but experiment more than young ones (Zahra et al., 2006, p. 939). Age of the company has another influence on capability development, competence destroying capabilities “were largely pioneered by new firms” and competence-enhancing were largely “introduced by established industry members” (Tushman & Anderson, 1986, p. 455). This may mean that incumbent companies might not be so good in NPD. On the other hand, young companies “have higher failure rates” – “liability to newness” (Singh & Lumsden, 1990, p. 168).

Age has been used before as a variable in lifecycle research (Kazanjian, 1988, p. 268). To solve the second research question, the prior literature regarding capabilities development leads to the hypotheses:

Hypothesis 2: Capabilities get better by time.

Hypothesis 3: The focus of capabilities change by age.

⁸ Similarly, once established, capabilities require on-going care and development to constantly fit with environmental changes (Teece et al., 1997, p. 515).

⁹ At large, they matched ideas from Kazanjian (1988, p. 267) – first resource acquisition (e.g. finding finances), partnership (e.g. collaboration, alliancing, partnership), increasing market share (e.g. internationalisation) and then internal control (e.g. quality management).

3. Methodology

This research is a part of larger research, where the mixed method is applied (Cresswell, 2003), it started with in-depth qualitative research to identify a broad set of core capabilities and observe their evolution in accordance with market dynamism (emergence, take-off, growth) (Rungi & Kolk, 2011).

3.1. Survey

This research takes a mainly positivistic approach and uses an online survey for data acquisition. Describing is one of the aims of social sciences (Danemark et al., 1997), and the aim is to describe the capabilities and their development phenomenon. However, researchers also agree with critics that management disciplines are mind-dependent (Robson, 2002, p. 20), therefore attempts were made to reach constructivism (i.e. open-ended questions were included to the survey).

Dynamic capabilities “are difficult to measure” due to their routine/process nature (Easterby-Smith et al., 2009, p. S6). The literature review revealed that there is no validated questionnaire available for project and portfolio management capabilities, therefore a questionnaire was developed on the basis of the following sources: Rungi and Kolk (2011), Killen and Hunt (2010), Petit and Hobbs (2010), Söderlund (2007, 2005), and Brady and Davies (2004), among others. Best capability practices were taken, since it has been found that there is a significant homogeneity across companies in capability related questions (Eisenhardt & Martin, 2000, p. 1105). Rungi and Kolk (2011) found a set of capabilities in a large multinational ICT company. Killen and Hunt (2010), Petit and Hobbs (2010), Söderlund (2007, 2005) and Brady and Davies (2004) proposed several PM and PPM capabilities and their development methods. For example, Killen and Hunt (2010, p. 6, 8) proposed that PPM should be looked through the lens of strategic management and organizational learning.

Different general, PM and PPM capabilities are under focus, and the capabilities level of goodness/integrity are measured in the 5-step Likert scale. Capability phenomenon is not looked at explicitly, but through the terms abilities, skills and competences (i.e. in accordance with definition by Teece et al. (1997)). On the basis of unit of analysis – capability portfolio, the decision was made to also use aggregated measures, and not only disaggregate each capability into several measures, because this approach has difficulties (Ethiraj et al., 2005, p. 29). Easterby-Smith et al. (2009, p. S6) give some examples for disaggregation. PM capability is disaggregated into a group of PM related capabilities, and comparing them includes additional validity to the research. A similar approach was used for PPM capability.

Some authors have proposed competitive advantage as a dependent variable (Killen & Hunt, 2010, p. 6), however, there are also other variables that are connected and influence competitive advantage (Barney, 1991; Porter, 1981), but are easier to measure. This work has profit as a dependent variable. Independent variables were the level of goodness of different capabilities. This level of goodness (i.e. quality) is taken due to its mediating role among dynamic capabilities and performance (Zahra et al., 2006, p. 943). It is a fact that capabilities influence competitive advantage, as was proven by Killen and Hunt (2010, p. 19). Age of the company is a control variable to observe how time influences the capabilities’ development and change.

When testing the reliability (quality) of the questionnaire, Cronbach's Alpha is calculated for capability groups. The minimum recommended value for Cronbach's Alpha is 0.7 (Pallant, 2001, p. 6, 85), and the values show acceptable reliability (see Table 1, Table 2, and Table 3). Open-ended questions also proved that the list of capabilities used in the questionnaire is adequately correct – no significant additions existed. New items were not pure capabilities, such as 'experience'.

3.2. Sample

The target population consists of Estonian companies. According to statistics there are 75,686 active companies (Estonian Tax and Customs Board, 2011), i.e. companies with some turnover. Students helped to gather the data, they were free to randomly select the companies. There are no comprehensive list of Estonian companies available, therefore data gatherers were forced to use different approaches, including randomly chosen companies from phonebook type of sources, not excluding well-known companies and snowball sampling. The survey was sent out and performed in November 2011. There were two language versions of the questionnaire, Estonian and Russian, due to the significant Russian minority in Estonia. 342 companies were contacted, 189 of which replied (response rate of 55%). The number of reminders, up to two reminders, varied by language groups. In case of confidence level 95% and response distribution 50%, this sample size corresponds to the confidence interval/margin of error 7,12% (Survey System, 2012), that makes the sample representative enough. Good reliability was guaranteed by 35% of respondents being owners, 11% top managers, 16% project managers, 15% specialists. A wide variety of industries are represented, for example, from wholesaling 16%, construction 13%, ICT 9%, manufacturing 9%, and the rest were from other industries. SMEs are well represented: 28% of micro- (1-9 employees), 33% small- (10-49 employees), 28% medium- (50-249 employees) and 19% large-sized companies (250 and more employees). Focus of this research was on project-oriented companies, as there were some 142 companies out of 189 companies (75%) who claimed to use projects in their daily management. Project-orientation is anything "that relates directly or indirectly to projects" (Artto & Wikström, 2005, p. 351). Importance of projects are emphasised and explained by comparing opposites – i.e. project-oriented companies with non-project companies.

4. Results and Discussion

4.1. Descriptive Statistics

Interestingly, project-oriented companies show much better results throughout all capabilities (Table 1), not just in circumstances of PM and PPM capabilities. Project orientation is a significant factor to receive better level capabilities. The biggest difference between mean scores of project and non-project companies exists in the case of 'internationalisation' ($M_{diff} = 0.97$, $p < 0.001$) and 'strategic management' ($M_{diff} = 0.84$, $p < 0.001$), and the smallest difference in the case of 'HR development' ($M_{diff} = 0.16$) and 'exploring new business areas' ($M_{diff} = 0.20$) capability (project related capabilities were excluded, there the difference is presumably larger and does not have a clear meaning). 'HR development' is

interesting because this would indicate that the difference does not come from human skills, culture etc., but from project-orientation as such.

Companies evaluate rather averagely their capabilities, as mean values vary between 1.99–3.76. They evaluate themselves highly in finding new opportunities, mostly on the basis of benchmarking other ideas (imitation), not on the basis of R&D (innovation) (for example, it is found that Estonian machinery has a low R&D capability (Varblane et al., 2011, p. 221)). Estonian companies are more service oriented, less production and manufacturing oriented, and entering foreign markets is not good, as a competitive advantage seems to lay more on efficiency (e.g. ‘exploiting new emerging technologies’).

Table 1. How use of projects influences the level of goodness of general/business capabilities

Capability	Use of projects			
	Project-oriented companies Mean	s.d.	Non project companies Mean	s.d.
Sensing business opportunity (exploration)	3.82	.934	3.59	1.002
Finding external funding (exploitation)**	2.76	1.447	1.95	1.322
Product development (exploration)*	3.52	1.214	3.07	1.371
Internal R&D (exploration)**	2.91	1.406	2.23	1.461
External R&D (exploration)	2.36	1.280	2.12	1.308
Customer innovation (exploration)*	3.46	1.243	3.02	1.202
Exploiting new emerging technologies (exploration)*	3.73	1.101	3.29	1.359
Exploring new business areas (exploration)	3.18	1.089	2.98	1.125
Partner network building (exploitation)*	3.63	1.094	3.23	1.217
M&A management (both)	2.09	1.355	1.65	1.210
Branding (exploitation)**	3.30	1.278	2.68	1.410
Marketing and sales (exploitation)*	3.65	1.098	3.16	1.205
Advertisement management (exploitation)	3.01	1.342	2.73	1.176
Quality management (exploitation)*	3.61	1.201	3.18	1.386
License management (exploitation)	2.88	1.585	2.54	1.551
Internationalisation (exploitation)***	3.21	1.555	2.23	1.377
Manufacturing (exploitation)	2.53	1.549	2.27	1.515
Strategic management (exploitation)***	3.68	1.081	2.84	1.293
Logistics management (exploitation)	3.29	1.404	3.09	1.476
Risk management (exploitation)*	3.23	1.194	2.73	1.318
Change management† (exploration)**	3.26	1.052	2.54	1.343
Entering a new market (exploitation)**	2.41	1.346	1.82	1.187
HR development (both)	3.60	.975	3.43	1.109
Project management† (exploration)***	3.83	.910	2.56	1.289
Project portfolio management (exploration)***	3.36	1.239	2.05	1.244

Note: independent samples t-test; ***p < 0.001; **p < 0.01; *p < 0.05; †unequal variance; all companies; scale: 1 – missing ... 5 – performs strongly/successfully; Cronbach’s Alpha α = 0.88; homogeneity not violated; exploration/exploitation division on the basis of Rungi and Kolk (2011)

Source: Author’s compilation

As a response to the first research question, the best capabilities to be developed are: 1) ‘sensing business opportunity’ (M = 3.76, t(183) = 1.441, p = 0.15), 2) ‘exploiting new emerging technologies’ (M = 3.62, t(184) = 2.208, p = 0.03), and 3) ‘HR development’ (M = 3.56, t(186) = 0.957, p = 0.34). Estonians are good at finding business opportunities, but rarely are able to implement them (e.g. one of the exceptions is Skype). Personnel are well educated and post-graduation education continues in companies. The worst capabilities to be developed with care are: 1) ‘M&A management’ (M = 1.99, t(167) = 1.851, p = 0.07), 2) ‘entering to new market’ (M = 2.27, t(177) = 2.626, p = 0.01), and 3) ‘external R&D’ (M = 2.30, t(168) = 1.017, p = 0.31). The biggest problem is cross-border partnering, probably common for northern cultures and partly inherited from the Soviet era for the whole of Eastern Europe.

Killen and Hunt (2010, p. 18) emphasize the role of teamwork and change management, as their current work also evaluates them rather highly. Capabilities’ role to exploit new emerging technologies in project-oriented companies is mentioned by Brady and Davies (2004, p. 1608). This work also pays attention to ‘project risk management’, Hamel (2002, p. 275) makes “a distinction between project risk and portfolio risk”, recommending many small risky projects rather than a few big but less risky projects.

A test for hypothesis 1, ‘companies report better results in exploitation oriented capabilities than exploration oriented capabilities,’ is carried out. Descriptive statistics show that exploitation capabilities (M = 2.47-3.53) are averagely less evaluated than exploration capabilities (M = 2.75-3.76), which means the hypothesis did not find support.

Table 2. How use of projects influence the level of goodness of PM capabilities

Capability	Use of projects			
	Project-oriented companies		Non project companies	
	Mean	s.d.	Mean	s.d.
Project delivery†***	3.30	1.349	.34	.847
Project teamwork***	3.89	1.067	.49	1.189
Project organizing***	3.97	1.000	.56	1.209
Project leadership***	3.89	1.080	.59	1.229
Project generation***	3.51	1.148	.46	1.047
Cross-project learning***	3.28	1.202	.50	1.133
Project risk management***	3.03	1.194	.42	.976
Project time/scope/cost management***	3.46	1.229	.43	1.144
Project quality management***	3.50	1.269	.42	1.130

Note: independent samples t-test; ***p < 0.001; **p < 0.01; *p < 0.05; †unequal variance; all companies; scale: 1 – missing ... 5 – performs strongly/successfully; Cronbach’s Alpha α = 0.91; homogeneity violated in case of 4 capabilities out of 9: ‘project management’, ‘project delivery’, ‘project time/scope/cost management’, ‘project quality management’

Source: Author’s compilation

Results for non-project companies are given only for indicative reasons. Non-project companies have a clear threshold to enter into the project world (Table 2, Table 3), and their know-how in project related questions is significantly lower. A lack of project education is one of the reasons, for example, “no department in a business school in US has project

management in its name” (Turner, 2008, p. 4), but companies do not only rely on universities, as in the neighbouring country of Finland, some companies have established their own academies (Rungi, 2009). Similarly, the Estonian education system does not produce specialists at the level industry requires (Rungi, 2009).

Table 3. How use of projects influences the level of goodness of PPM capabilities

Capability	Use of projects			
	Project-oriented companies		Non project companies	
	Mean	s.d.	Mean	s.d.
Project selection***	3.54	1.284	.55	1.132
Project portfolio maximization***	2.98	1.300	.50	1.059
Balancing project portfolio***	2.94	1.212	.50	1.084
Strategic alignment***	3.49	1.316	.58	1.222
Portfolio review***	3.59	1.312	.55	1.132

Note: independent samples t-test; ***p < 0.001; **p < 0.01; *p < 0.05; equal variance; all companies; scale: 1 – missing ... 5 – performs strongly/successfully; Cronbach’s Alpha α = 0.89; homogeneity not violated

Source: Author’s compilation

Project capabilities may be context-specific (Ethiraj et al., 2005, p. 42; Söderlund, 2005, p. 467), therefore PM and PPM capabilities are looked at across industries. The sample was quite evenly shared among different industries, except wholesaling, construction, ICT and production, which were more represented. Industries do not differ significantly from each other in their perception of PM and PPM capabilities, as industries showed homogeneity across industries, as predicted by institutionalism (DiMaggio & Powell, 1983). Homogeneity in PPM across industries is also previously mentioned (Killen & Hunt, 2010, p. 1, 15). PM and PPM are higher in service oriented (“soft”) companies, than in production (“hard”) companies.

4.2. Analytical Part

The most influential capabilities are found at two levels of analysis – at an individual level and at a group level. Factor analysis was applied to propose grouping for capabilities. Three groups clearly became identifiable and regression models were constructed as follows: (1) general/business managerial capabilities; (2) PM related capabilities; (3) PPM related capabilities; and (4) all together. Profit was considered as a dependent variable, general capabilities explain the biggest part of variance (38%), PM and PPM explains similarly, 14% and 13% of profit variance. Regression analysis shows that PM and PPM related coefficients influence ‘profit’ most, in both cases. The biggest positive influence comes from ‘project time/scope/cost management’ ($\beta = 0.536, p < 0.01$), presumably from ‘project portfolio maximization’ ($\beta = 0.429, p < 0.01$) as a capability with a clear aim on profit and ‘cross-project learning’ ($\beta = 0.347, p < 0.05$) and as a capability widely emphasized in project and organization learning literature (Killen & Hunt, 2010; Tushman & Anderson, 1986). In the case of ‘project portfolio maximization’ it must be kept in mind that companies often deliberately make “multiple investments toward the same goal, there may be some

redundancy” in a portfolio, and projects may also “interact with one another” – “competing projects ... lead to sub-additive value of the portfolio” and “fungibility of shared resources ... leads to a super-additive value of the portfolio” (Vassolo et al., 2004, pp. 1045–1048). The biggest negative influence for profit comes from ‘project quality management’ ($\beta = -0.614$, $p < 0.01$) as a cost related factor for a short-term perspective, ‘project organizing’ ($\beta = -0.532$, $p < 0.05$) and ‘strategic alignment’ ($\beta = -0.408$, $p < 0.05$), since it may cause inflexibility for anything new and cause the company to be stuck in the past, therefore losing new profitable possibilities. Hamel (2002, p. 154, 115) says that “alignment is [only] fine – if the world isn’t changing”, otherwise a company needs to be agile and refocus quickly. On the other hand, Wang and Ahmed (2007, p. 42) pose that capabilities developed in accordance with strategic alignment “lead to better firm performance”. Furthermore, “wrong projects in R&D produce additional useless work, which slows up other projects, and decreases the productivity and effectiveness of R&D” (Piippo et al., 1999).

Exploitation is found to be the main source for earnings (Rungi & Kolk, 2011; Regnér, 2003; Levinthal & Myatt, 1994, p. 47), i.e. capabilities, such as manufacturing, finding funds, quality management and marketing related ones (Table 1) – regression analysis does not confirm hypothesis 1.

An open-ended question was asked to find the most missed PM and PPM capabilities to be developed. In PM, companies mostly missed teamwork (mentioned 14 times by respondents – hereafter occurrence of respondents’ answers is mentioned in parentheses after the name of capability). The importance of ‘teamwork’ was also stressed by Söderlund (2005, p. 466). Appropriate business processes (3) are mentioned in project literature in relation to risk management (6) (Artto et al., 2000) and while linking project and business processes together (4) (Thiry & Deguire, 2007, p. 654). Traditionally, PPM carries three goals: portfolio maximisation (0), balancing (7) and strategic alignment (9) (Cooper et al., 1999, p. 29), but companies see it a bit differently, as they also desire to have competent staff (8) and good communication in portfolio reviews (6). These more daily management related aspects have received earlier attention (Killen & Hunt, 2010, p. 4). While teamwork was emphasized for PM (14), in literature it is also emphasized for PPM (Killen & Hunt, 2010, p. 12), however, this is not found to be the case in this sample. ‘Project selection’ is presumably mentioned (7), because it is quite common that there are “too many projects and not enough resources” (Cooper, 1999, p. 129), and “narrow project selection” is also a competence trap (Söderlund, 2005, p. 476). There has to be a match between the portfolio and available resources (Bredin, 2008, p. 574). “Technical literacy” (Leonard-Barton, 1992, p. 117) is important for capabilities, as it was mentioned under the ‘competent staff’ (8). Planning and communication is known as relevant success factors for NPD (Brown & Eisenhardt, 1995, p. 354). A lack of communication is considered one of the weaknesses in Estonian machinery (Varblane et al., 2011, p. 142). Planning is mentioned four times in missed PM capabilities. Planning, together with leadership (10), organizing (10), quality (7), risk (6) and time management (14) have been found to be consistently significant for a while (Crawford et al., 2006, p. 178). Projects are unique by nature, but the importance of prior experience (3) is also mentioned by many researchers (e.g. Jugdev & Müller, 2005, p. 26; Engwall, 2003, p. 791), for example, incumbent companies with prior experience improvise less (Zahra et al., 2006, p. 937). There can also be some cross-loadings between chosen items, for example, risk management (6) is related with planning (4) (Kähkönen, 1998), strategic alignment (9) with project selection (7) (Artto et al., 2001), contacts with experience (3) (Penrose, 1959, p. 218),

leadership (10) with teamwork (14) and learning (6) (García-Morales et al., 2011) etc.

Better/higher values in capabilities must come with age, unfortunately this was not a clear trend in the sample, as it was only noticeable in the case of 18 out of 39 capabilities. PM and PPM capabilities are getting worse with time, companies become bigger with time, and big companies lose their ability and flexibility in PM.

Table 4. How the level of goodness of general/business capabilities change through time

Capability	Age of company		
	1-5 years Mean	6-10 years Mean	11 and more years Mean
Sensing business opportunity	3.83	3.78	3.84
Finding external funding	2.50	3.11	2.78
Product development	3.36	3.57	3.66
Internal R&D	2.73	3.31	2.87
External R&D	2.39	2.88	2.16
Customer innovation	3.41	3.29	3.51
Exploiting new emerging technologies	3.77	3.86	3.73
Exploring new business areas	3.23	3.29	3.10
Partner network building	3.53	3.72	3.70
M&A management	1.82	2.00	2.27
Branding	3.27	3.19	3.36
Marketing and sales	3.73	3.70	3.63
Advertisement management	3.07	3.04	2.92
Quality management	3.53	3.93	3.63
License management	2.96	3.13	2.72
Internationalisation	3.10	3.20	3.38
Manufacturing	2.62	2.24	2.65
Strategic management	3.53	3.52	3.77
Logistics management	3.17	2.92	3.58
Risk management	2.97	2.96	3.37
Change management	3.17	3.19	3.28
Entering a new market	2.60	2.39	2.44
HR development	3.62	3.75	3.56
Project management	3.97	3.82	3.80
Project portfolio management	3.62	3.15	3.31

Note: one-way ANOVA; ***p < 0.001; **p < 0.01; *p < 0.05; scale: 1 – missing ... 5 – performs strongly/successfully

Source: Author’s compilation

While Killen and Hunt (2010, p. 19) emphasize that PM capability is needed before PPM, analysing changes in capabilities by taking ‘age’ as a control variable does not reveal it clearly. Tushman and Anderson (1986) presumed that incumbent might not be good in competence-destroying technologies, as when looking at ‘product development’ and

‘internal R&D’ it is not evident, however, some support can be seen in case of ‘external R&D’ and ‘exploring new business areas’.

As a response to the second research question, the three strongest capabilities are in young companies (1-5 years old): (1) ‘project organizing’ (M = 4.27), (2) ‘project leadership’ (M = 4.03), (3) ‘project teamwork’ (M = 4.00). In medium aged companies (6-10 years old): (1) ‘quality management’ and ‘project leadership’ (M = 3.93), (3) ‘project organizing’ (M = 3.86). Finally, in 11 and more years old companies: (1) ‘project teamwork’ and ‘project leadership’ (M = 3.93), (3) ‘project organizing’ (M = 3.90).

Three weakest capabilities are in young companies (1-5 years old): (1) ‘M&A management’ (M = 1.82), (2) ‘finding external funding’ (M = 2.50), (3) ‘manufacturing’ (M = 2.62); in 6-10 years old companies: (1) ‘M&A management’ (M = 2.00), (2) ‘manufacturing’ (M = 2.24), (3) ‘entering to new market’ (M = 2.39); and in the rest of companies (11 and more years old): (1) ‘external R&D’ (M = 2.16), (2) ‘M&A management’ (M = 2.27), (3) ‘manufacturing’ (M = 2.65).

Table 5. How the level of goodness of PM capabilities change through time

Capability	Age of company		
	1-5 years Mean	6-10 years Mean	11 and more years Mean
Project delivery	3.52	3.04	3.38
Project teamwork	4.00	3.61	3.93
Project organizing	4.27	3.86	3.90
Project leadership	4.03	3.93	3.82
Project generation	3.33	3.56	3.57
Cross-project learning	3.30	3.39	3.28
Project risk management	2.82	2.96	3.12
Project time/scope/cost management	3.43	3.57	3.40
Project quality management	3.63	3.54	3.49

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Note: one-way ANOVA; ***p < 0.001; **p < 0.01; *p < 0.05; scale: 1 – missing ... 5 – performs strongly/successfully

Source: Author’s compilation

Table 6. How the level of goodness of PPM capabilities change through time

Capability	Age of company		
	1-5 years Mean	6-10 years Mean	11 and more years Mean
Project selection	3.63	3.56	3.54
Project portfolio maximization	3.10	2.88	3.02
Balancing project portfolio	3.14	2.96	2.84
Strategic alignment	3.43	3.36	3.55
Portfolio review	3.87	3.68	3.45

Note: one-way ANOVA; ***p < 0.001; **p < 0.01; *p < 0.05; scale: 1 – missing ... 5 – performs strongly/successfully

Source: Author’s compilation

Rungi and Kolk (2011) found that in the reference companies the exploitation type of capabilities move from core service to diversification, and exploration type of capabilities move from internal to external, concluding with diversification. Here, the external dimension (external R&D, M&A management, customer innovation) remained low throughout the stages, as no significant rise was noticed. As a test for hypothesis 2, 'capabilities get better by time', the ANOVA analysis shows that 16 capabilities get better, 19 get worse, and 4 remain the same (Table 4, Table 5, Table 6) – hypothesis is not supported. Hypothesis 3 'the focus of capabilities change by age' is tested as well, and the ANOVA analysis shows that the strongest remain strongest (e.g. 'project organizing', 'project leadership', 'project teamwork'), and weakest remain weakest (e.g. 'M&A management', 'manufacturing') (Table 4, Table 5, Table 6), which means that the hypothesis is not supported.

5. Conclusion

The aim of this research was to find out which capabilities are most influential, well or worst developed, and give some reasoning for them. Project-orientation is a required pre-condition for having high-level capabilities' development. Furthermore, PM and PPM seems to have better results in service oriented companies, as production companies do not report as good results.

Research finds most well developed capabilities to be: (1) 'sensing business opportunity', (2) 'exploiting new emerging technologies', and (3) 'HR development', which confirms earlier findings from the dynamic capabilities' theory – ideas are not the most important, implementation is. Capabilities, which need to be improved are: (1) 'M&A management', (2) 'entering to new market', and (3) 'external R&D', which are to some extent sample dependent, SMEs evidently do not concentrate on M&A, but could. However, they should pay more attention to internationalisation service and production industries.

Well-developed capabilities might not be the most influential to profit, as it turned out that project related capabilities are more important than general managerial capabilities, for example, traditional (1) 'project time/scope/cost management' and (2) 'project portfolio management' are most important. A good PM is important, but less taught in universities (Turner, 2008, p. 4). The most negative influence on profit comes from (1) 'project quality management', (2) 'project organizing' and (3) 'strategic alignment'. Capabilities are very important per se. They influence the outcome variable to a large extent and significantly. No match with best/worst capabilities.

Age of the company provides some reasons and trends for development, because by age the PM and PPM are getting worse, and business capabilities behave in various ways. Size matters, old incumbents become more hierarchical and bureaucratic, which may make them less flexible in project related questions and put more focus on M&A.

Research provided descriptive results, of which practical and theoretical implications are very high. Managers can choose and follow those capabilities that influence outcome performance most significantly. These recommendations consider the company's age and are therefore more adequate. From a theoretical point of view, many prior findings do not hold in a current research setting, for example, all hypotheses are not supported, capabilities do not get better with time, the strong remain strong, and weak remain weak, exploitation and exploration capabilities are equally evaluated.

This work has a number of limitations. Responses originate from Estonia, and this affects the generalizability to other countries. Findings are definitely relevant for companies in countries of similar size. Considering the Estonian background and similarities among Eastern-Europe countries, this work is more applicable to Eastern-Europe countries and the region. Furthermore, not all industries were equally represented in the sample, as this makes it less generalizable for those industries that were not present.

There was no previously used questionnaire available which has a certain impact on validity and reliability. Capability portfolio is a unit of analysis and capabilities are independent variables in this research and due to the amount of capabilities it would not have been possible to measure each capability through a multi-item scale as recommended by Venkatraman and Grant (1986, p. 78), therefore, the aggregated approach makes this research more perceptual.

Self-reporting bias is avoided by non-sensitive questions, a symmetrical research setting (companies were also able to express negative aspects of the phenomenon), appropriate target group (managers with a strong will), guaranteed anonymity, and offering a chance to use an 'I do not know' choice if needed.

Dynamic capabilities are related with many theories. This tangle might not be for the benefit of phenomenon, as understanding and utilization suffers, convergence is needed. Dynamic capabilities are not that exceptional, as whole management theory can be characterized this way (Koontz, 1980, p. 175, 183). The attempt here is to converge findings from PM, PPM and organizational learning to the dynamic capabilities' field, this work could continue in the future. An in-depth study to find out how PM and PPM impact performance would be useful.

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