Effectuation in Business to Government Context
**Master Thesis Project in Business Administration**

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**Abstract**

Effectuation is a theory about entrepreneurial problem-solving and management that was first identified by Sarasvathy (2001). Effectual logic has proven to be particularly useful when the company is functioning under the conditions of high uncertainty or goal ambiguity. It is an already widely-studied topic and it has been examined in various contexts, but one field that has completely lacked the attention of the researchers is the business to government context. Our study is focusing on effectuation in business to government context in specific and the aim of our study is to find out (1) how the business to government context influences the application of effectual logic, (2) and what the potential outcomes for innovation are. We used action research to build understanding through a deep involvement with a case organization. Through an experiment involving managers of our case organization, we could find which process is used, and how it relates to the context. Our conclusions show that business to government context sets some limitations to effectual approaches, and we present a framework which represents this effectual process observed in our case organization. In addition, grounded on our previous findings, we analyzed how this practiced process, and the context, set barriers to innovation as well: results such as difficulties to gain pre-commitments, inability to spread risk among stakeholders and difficulty to run pilot projects, are some of the observed findings. On the other hand, we argue that this brought to a focus on incremental innovations, which are new features added to pre-existing products sold to pre-existing clients. At the end of our study we come up with implications for researchers, which could be used to direct future contextual studies regarding effectuation and innovation. But also, some implications for policy makers and managers are presented, so to suggest ways to lower barriers for radical innovation in business to government, and create a more innovative friendly context.
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1. Introduction

For decades, managerial studies have tried to explain the reasons behind the success of fortunate 500 companies and the ones behind failure of some other. Approaches based on prediction have been popular in past literature and great leaders have been described as “great visionaries”. These assumptions might have hold through in the era of industrialization, but how can we run a market research study for a product that does not have yet an existing market? And how can we run strategies based on five year goals when economy is changing with ever increasing speed.

Effectuation is an approach of the expert entrepreneurs, which was first discovered and conceptualized by Sarasvathy (2001). Effectual approach to entrepreneurial problem-solving relies on four cornerstones (1) affordable loss (2) strategic alliances (3) exploitation of contingencies and (4) controlling an unpredictable future rather than predicting an uncertain one (Sarasvathy, 2001). Effectuation is proven in practice to be a powerful tool for navigating businesses under the conditions of high uncertainties. However, most of the case examples provided by academic studies have focused on business to consumer and high-tech companies. Still, innovation pushes new markets to emerge also in the business to government sector, such as Smart City industry, where there is still plenty of opportunities for firms to innovate, and we only by now start to understand how “high-tech” products and technology break throughs made in this sector are beneficial for the entire socio-economic system due to spillover effects.

Sarasvathy (2001) presented effectuation as an alternative to a traditional causational process. According the author, effectual logic is especially useful under the conditions of high uncertainty. Effectuation is a process that starts with a given set of means and focuses on the possible effects that can be created with this given set of means, whereas causation process takes the effect as given and focuses on selection between possible means (Sarasvathy, 2001). Effectuation is a frame of thinking that is widely used by “expert entrepreneurs”. Dew, Read, Sarasvathy, and Wiltbank (2009) note that expert entrepreneurs, entrepreneurs with experience from starting several ventures and proven superior performance, are applying effectual practices instead of predictive logic to decision making. The authors suggest that effectuation is an approach that the expert entrepreneurs have
learned through experience and it allows them to reason and ground comprehensive decisions from smaller amounts of data.

Early effectuation studies are focused on individual level, but the principles of effectuation can be applied to corporation level as well. Werhahn, Mauer, Flatten and Brettel (2015) present effectual orientation as a strategic direction that underlines the emphasis and importance of employees adopting the principles of effectuation at their work. Increasingly dynamic environment requires innovative approaches for maintaining competitive advantage and thus companies are seeking for ways to improve their proactiveness and innovativeness (Werhahn et al., 2015).

This study is focused on the effectuation in business to government market. In defining in our study the business to government context, its actors, dynamics and values, we noticed that they have an important impact on fostering innovation. Starting from a brief historical background analysis, we discovered a trend that brought firstly managerial and marketing practices in the public sector, making efficiency and service the “client” a more central focus on government services than ever. (Lamb, 1987; Purchase, Goh, & Dooley, 2009). Then we will observe how, based on our literature review, we discovered that despite the benefits to local economies (cities, regions, and nations), public agencies are still too cautious in taking bigger risks, limited by austerity budgets, political responsibilities, bureaucracies and public strategic goals. But the lack of will to innovate is present also on the private supplier side: despite there are proven long-term socio-economic benefits, public procurement processes and bureaucracy limit the proposal of a variety of potential solutions, adding risk in developing new products, therefore preferring furthering specific products which already exist.

For an entrepreneur to be successful and see his innovation realized, he must connect with a group of actors that potentially are interested to purchase, so approve his innovation. Therefore, the ability and ways for an entrepreneur to operate in a context depends on type of actors and network within each group. Therefore, to start understanding how a firm which operates exclusively in the business to government market, selling its products only to public institutions and governmental agencies differentiates from the private market.
The base of our action research is the collaboration with a company which expressively stated its interest in supporting this study so to understand how to solve the contextual dilemma of providing innovation to the public sector. Discussing with the top management, we have acknowledged their current operations which guarantee them a steady incremental innovation amount, yet their desire to achieve more radical innovation, achieving a competitive advantage position. Through interviews, a training, and a case competition evaluated by an internal judge, we aim to begin the exploration on the impact of the public context on their decision process and, therefore, innovative processes. Through the theoretical background and the analysis of our empirical results we will understand how the strategic goals of public government, which differs from the private ones, affects deeply in defining the context and as public actions (Purchase, Goh, & Dooley, 2009). In fact, entrepreneurs are considered change agents within society, but to do so the environment must welcome and support their activities. Despite being noticed gaps in public market research (Purchase et al., 2009), there has been an increased interest in how innovation in business to government can be promoted and spread by public institutions more effectively. Yet there seems to be little awareness from previous scholars on which processes are applied from the private suppliers in the public market, and how this impacts the delivery of innovation within the context.

Therefore, the purpose of our study is to answer our research questions, which are: (1) How does the business to government context influence the application of effectual logic and (2) what the outcomes for innovation are. We will follow with further studies suggestions, limitation and implications for policy makers and managers to foster innovation in the public sector, and implications for researchers. This action research will also provide some practical insights for the case company based on our findings, so to answer their initial request of improving their innovative output in the long-term.

2. Literature Review

In the last twenty years, the world saw the rise of great technological innovation and social changes. Social studies increasingly focused on entrepreneurship since half a century, noticing the changing agent role it has within society and economy. Since the Great Depression, the attention of researchers focused on the social actor entrepreneur. This can
be seen through Schumpeter’s most popular book “Capitalism, Socialism and democracy”, in which he recognizes that the engine of capitalism runs on creative destruction.

Sarasvathy and Venkataraman (2011) present entrepreneurship as a method that is analogous to the scientific method. Furthermore, the authors suggest that entrepreneurship should be taught to every person as a useful and necessary skill and as a frame of thinking that can be used to reason events and to make sense out of the world. Benefits of the “entrepreneurial method” have also been recognized in the field of managerial studies. According McKelvie, Haynie, and Gustavsson (2011) in the situation where the change is frequent, and the prevailing conditions can be described as highly uncertain and unpredictable, entrepreneurial approach to management may be particularly useful. Effectuation is also proven to correlate positively with R&D project performance in highly innovative contexts (Brettel, Mauer, Engelen, & Küpper, 2012). Furthermore, effectuation can through affordable loss principle effectively reduce the risks related to new product development or any other business activity that involves risk-taking and high compare the dynamics of Effectuation and traditional strategic management school and see how these practices are currently being applied to the corporation context. Furthermore, we will examine the possible limitations that the business to government context might set for applying practices that are based on effectuation.

2.1. Effectuation

Sarasvathy (2001) presents that creation of such artifacts as markets, firms and economies cannot be explained with traditional approaches that rely on causational logic. She points out that emerging technologies, such as internet are creating rapid change and redefining the ways how we do business in the 21’st century. The theory called “Effectuation”, which was first presented to the world by Sarasvathy (2001), is well suited for navigating businesses in the new turbulent and ever-changing environment. The author suggests that preexistent markets can be captured by using techniques of market research and strategies, but in the new era of e-commerce and other emerging and yet untapped technologies, most markets are nonexistent or nascent. Achieving success in the situation where markets are yet nonexistent, and we are forced to make decisions without preexistent goals requires approaches and methods that are better suited for dealing with uncertainties (Sarasvathy, 2001). Furthermore, effectuation can be understood as a science of artificial. Sciences of artificial is used to explain the creation of human artifacts, and the core principles behind this theory can also be linked to those behind effectuation (Sarasvathy, 2003).
Sarasvathy (2001) underlines that causation processes take focus on selecting between means to create an effect that is given, whereas effectuation processes take a set of means as given and focus on selection between possible effects that can be created with this given set of means. Dew, Read, Sarasvathy, and Wiltbank (2009) describe effectuation as a means-oriented approach, where goals arise through imagination of courses of action in the limits of given means and determination of what “can be” and “needs to be” done. Put in another way, the differences between these two approaches is that causal framing involves the discovery and exploitation preexistent opportunities in a given problem space, whereas effectual framing approaches the problem by reframing the problem space and resembling existing realities into new opportunities (Dew et al., 2009; Sarasvathy, 2001; Sarasvathy, 2003). Compared to causational frame that can be described as “predictive”, effectual logic, which is described as “creative”, assumes the future to be at least partially shaped by willful agents and prediction is therefore seen as neither necessary or useful (Dew et al., 2009).

The Effectual logic holds on around four fundamental principles; (1) affordable loss, (2) strategic alliances, (3) exploitation of contingencies rather than exploitation of preexisting knowledge and (4) controlling an unpredictable future rather than predicting an uncertain one (Sarasvathy, 2001). Dew et al. (2009) define these cornerstones of the theory as follows. Affordable loss principle refers to an investment approach where the focus is on limiting downside potential. Following this principle, the entrepreneur invests only the amount of resources than he or she can afford to lose safely. Secondly, effectual logic focuses on building partnerships to create new markets. These partnerships, and equity partnerships shape and drive the trajectory of the new venture. Third, effectuators perceive contingencies as opportunities for innovation and therefore aim to leverage from them (Dew et al., 2009). Leveraging in this case refers to continuous transformations of targets when new information emerges (Sarasvathy, 2001), imaginative rethinking of possibilities and avoiding predictions (Dew et al., 2009).

Chandler, DeTienne, McKelvie, and Mumford (2011) prompt effectuation as a formative and multidimensional construct that has three associated sub-dimensions, experimentation, affordable loss and flexibility and one dimension, pre-commitments that are shared with causation construct. The authors confirm the suggestions of Sarasvathy (2001) by showing that experimentation, which is one of the sub-dimensions of effectuation is positively
associated with uncertainty, whereas causation is connected negatively with uncertainty. In the light of these findings, the use of effectual strategy is justified by corporation context, where the environment is described as ambiguous and unpredictable and in the situations where the company is entering to new untapped markets or creating entirely new ones. Figure 1 represents the problem space of an effectuator as described by Sarasvathy (2003). The author presents “suicide quadrant” as a problem space that is normally avoided by the venture capitalists and expert marketers. Yet the expert entrepreneurs favor this this problem space, where new products are introduced to the new markets since it holds great opportunities in it. Furthermore, the expert entrepreneurs know that problem-solving in this space won’t begin with clearly specified goals and causal rationality (Sarasvathy, 2003).

Figure 1 Problem Space for Effectuation (Sarasvathy, 2003, p. 206)
2.2. Causation

In past centuries, well thought strategies that relied on right positioning in the market, competitive analysis and best practices (Gaglio, 2004; Mintzberg, 1979; Porter, 1991) have been differentiating “the fortunate” companies from others. Successful businesses and entrepreneurs are the ones who have superior skills to explore the environment and spot the opportunities from existing markets (Drucker, 1998; Herron & Sapienza, 1992) and identify the ones with highest expected return (Drucker, 1998). By carefully analyzing the environment and the competitors and well thought market positioning, a company can protect itself against possible downside risks (Porter, 1979). According to (Chandler et al., 2011) plenty of existing entrepreneurship literature has theoretical foundations in these early views, which can described as causational.

According to Sarasvathy (2001) causal logics take a particular effect as given and focus the energy on selecting between possible means that can create that predefined effect. Future is understood as continuation of the past and therefore prediction is seen as both useful and necessary (Dew et al., 2009). Decision makers dealing with predictable or measurable future are systematically gathering information from the environment and analyzing the options within certain bounds (Simon, 1959). Reality is understood as linear and static, and the entrepreneurial opportunities are identifiable and objective (Fisher, 2012; Sarasvathy, 2001). Causal processes are aiming to exploit these identifiable opportunities from existing markets with lower levels of uncertainty (Fisher, 2012). Now, the reader might feel like rushing to conclusion, that causal practices are representing stiff industrial age and “old-school” way of thinking that hinders innovation. However, causal logic is in fact still efficient and necessary tool in some contexts. As Brettel, Mauer, Engelen, and Küpper (2012) note, causal logics are in fact driving better R&D project performance in low innovation context. The authors found that goal-driven R&D projects had high output and better efficiency, when the innovativeness of the project was low. Effectual logics in turn seem to be particularly useful when the aim is to produce something very innovative (Brettel et al., 2012; Werhahn, Mauer, Flatten, & Brettel, 2015; Wiltbank, Dew, Read, & Sarasvathy, 2006).

Sarasvathy (2001) presents prediction, goal-orientation and focus on expected return instead of affordable loss principle as some of the attributes that differentiate causal logic from effectual logics. Besides, whereas in effectual logic the focus is on building strategic alliances, practitioners following the causal logics are focused on competitive analysis and using other
analysis tools and planning to avoid any unexpected events (Dew et al., 2009; Sarasvathy, Dew, Read, & Wiltbank, 2008; Sarasvathy, 2001). In mature markets the logics of causation may serve well (Johansson & McKelvie, 2012). Problems arise when the level of uncertainty increases and when the goals cannot be clearly defined (Wiltbank et al., 2006).

2.3. Corporate Effectuation

Effectuation as a concept is not new to the practitioners. In addition to expert entrepreneurs, managers of entrepreneurial firms have been applying practices that are described as effectual. Dew, Read, Sarasvathy, and Wiltbank (2008) present the behavioral theory of entrepreneurial firm (BTEF) that describes entrepreneurial firm behavior where the firm emphasizes fabrication of new environments through transformation over traditional approach that mostly focuses on acting within external environments. Effectuators are not only designing organizations, but they also concurrently fabricate their environment (Sarasvathy, Dew, Read, & Wiltbank, 2008). The authors declare three factors (1) accumulating stakeholder commitments under goal ambiguity, (2) achieving control through non-predictive strategies and (3) predominately exaptive (instead of adaptive) orientation to be the cornerstones of the strategy in the entrepreneurial firm. Effectuation has also proven ability to enhance the innovation within the organization where it is applied (Roach, Ryman, & Makani, 2016) and moreover, effectuation seems to be positively connected to R&D project performance (Brettel et al., 2012).

Effectuation is an approach that is used by culturally predisposed firms for product and service innovation and it is positively related to firm performance (Roach et al., 2016). Werhahn, Mauer, Flatten and Brettel (2015) suggest that effectuation at the firm level shows as a mindset that encourages entrepreneurial behavior of employees. The authors present effectual orientation as a strategic direction that emphasizes entrepreneurial decision making in five dimensions, which are (1) means orientation, (2) partnership orientation, (3) affordable loss orientation (4) contingencies orientation and (5) control orientation. Means orientation refers to a managerial ability to motivate the members of the organization to contribute and leverage their personal means, such as experience, knowledge, networks, competencies, interests and preferences. Partnership orientation in turn describes managerial focus that aims to create a culture in which their employees are encouraged to co-create the organization’s future together with partners and staff therefore perceive new actors in the market as potential partners (Werhahn et al., 2015). Partnership orientation helps the
organization to create new opportunities and moreover, working with partners who are interested in making pre-commitments helps the organization to achieve better control over its future and thereby reduce uncertainty (Sarasvathy, 2001; Werhahn et al., 2015; Wiltbank et al., 2006).

Werhahn et al. (2015) define affordable loss orientation as a managerial practice that encourages individuals to base their decisions on limiting the downside risks instead of focusing solely on maximizing profits. On a stakeholder level, affordable loss orientation means that stakeholders invest only what they can safely afford to lose and they also use affordable loss as evaluation criterion (Wiltbank et al., 2006). (Werhahn et al., 2015) suggest that affordable loss orientation provides employees a freedom of choice that can be particularly useful in highly uncertain situations where expected returns are difficult to estimate. Since calculation of affordable loss depends only on the investor’s subjective judgement of the present situation and the downside risk is fully in their control, the need for predicting the future is reduced significantly (Dew et al., 2008). Finally, as mentioned above, entrepreneurial firms are masters in exploiting contingencies. Dew et al. (2008) suggest that while approaches based on predictions rest on the idea of hedging against contingencies, effectuation aims to capitalize from unanticipated events. The authors denote that unexpected occurrences may provide not only unanticipated problems but also new opportunities that can leverage. Furthermore, the authors argue that contingencies don’t just erode the value of common means in achieving the goal, but also create opportunities to add new value through those means in pursuit of new goals. Therefore, the stakeholders of entrepreneurial firm follow the logic of effectuation and are open for surprising situations (Dew et al., 2008).

Entrepreneurial firms begin with means in the hand when figuring out the possible future directions for the organization (Dew et al., 2008; Werhahn et al., 2015; Wiltbank et al., 2006). Possible courses for action are then evaluated regarding affordable loss (Dew et al., 2008; Werhahn et al., 2015). Moreover, it seems that stakeholder interactions within the entrepreneurial firm differ from traditional view. Entrepreneurial firm stakeholders are not only resource providers, but they also generate new sub-goals for the firm (Dew et al., 2008; Wiltbank et al., 2006). This leads to immediate agendas through negotiations with other stakeholders (Dew et al., 2008). Dew et al. (2008) introduce two concurrent dynamic cycles that are simultaneously in action in entrepreneurial firms. First one of these cycles of
consequences is a widening cycle that brings more available resources to the growing stakeholder group. The second is a converging cycle that directs the growing group of stakeholders and resources toward more accurate goals that fuse into new artifacts. Further, the authors suggest that the network’s goals are transformations on the artifacts they are designing (Dew et al., 2008). Sarasvathy (2003) suggests that effectuation can be understood as a science of artificial. She denotes that sciences of artificial is used to explain the creation of human artifacts, and the core principles behind this theory can also be linked to those behind effectuation.

Werhahn et al. (2015) suggest that at the firm level, effectual orientation provides space for a specific way of entrepreneurial thinking and acting and thus encourages effectual behaviors and activities from individuals within the firm. Furthermore, the authors state that effectual orientation helps mature enterprises to replenish their entrepreneurial spirit and to respond to emerging competition and overall successfully encounter uncertainty. The authors underline that the dimensions of effectual orientation are dependent on environmental and organizational context and therefore they are very case dependent. Overall, firms where managers assert effectual orientation as a strategic direction can leverage the individual means base of the employees. Furthermore, these organizations can cross boundaries through new partnerships, move the focus on fresh contingency-based inputs, encourage employees to make their decisions while minding the downside risk and conceive and handle future as undefined, but therefore shapeable (Werhahn et al., 2015). The findings Johansson and McKelvie (2012) suggest that entrepreneurial culture and reputational capital of a firm are significant predictors of effectual decision making styles. The authors note that experienced innovation firms often sift towards effectual logic and tend to employ effectuation principles.

According to Dew et al. (2008), traditional strategic management school relies strongly on planning and adaptation. The authors present that while planning school of strategic management emphasizes prediction and accurate positioning and adaptive school stress quick adaptation to changing environment, the emerging school of strategic management relies on non-predictive control. In transformative school of strategic management, the managers focus on transforming current means into new co-created goals together with stakeholders to build “possible futures”. Actors using transformative approaches are transforming extant means into new futures. The authors underline that these transformative approaches emphasize construction and control when prediction is not possible. In other
words, transformative approaches are following pretty much the logic of effectuation. (Wiltbank et al., 2006) present prediction as a core issue in strategy making, because what is predictable should also be controllable. (Dew et al., 2008) declare control and prediction to be independent approaches. Decision makers tend to divide the environment into uncontrollable and controllable events (Dew et al., 2008; Wiltbank et al., 2006). Entrepreneurial firms are focused on working with resources that they currently control and use available means to transform the environment (Dew et al., 2008; Johansson & McKelvie, 2012; Werhahn et al., 2015; Wiltbank et al., 2006).

Dew et al. (2008) suggest that entrepreneurial firms work under the rubric of design instead of discovery. The authors declare that novelty and unpredictability have critical implications for the resource acquisition processes in entrepreneurial firms and therefore in entrepreneurial firm, the commitments are determined based on affordable loss principle instead of calculating expected values. The authors present that instead of adaptive resource allocation, the entrepreneurial firms are taking exaptive approach on resources in hand. According the authors, exaptation is a process where a resource is being connected to a new domain of use. The authors suggest that the existence of resources is not as such enough for explaining the choices made by firms. The authors conclude that by utilizing exaptive variations, effectual entrepreneurs may manage to create a wider and more diverse range of variation than adaptation alone could create. The authors present that effectuation as an approach is unquestionably exaptive in its orientation. Furthermore, the authors suggest that adaptation and exaptation will iterate as an entrepreneurial firm develops because the more stakeholders are brought on board, the more adaptations will occur. In sum, entrepreneurial behavior utilizes both set of exaptations and a set of adaptive actions.

According to Sarasvathy (2001, p. 250), contingency oriented firms are “excellent at exploiting contingencies”. Werhahn et al. (2015) present corporate contingency orientation as a managerial capability to motivate employees to make proactive, creative, rapid and effective changes when new meaningful information emerges. The authors suggest that in contingency oriented firms the new data is conceived as a new resource that can be leveraged. Finally, the authors indicate that corporate control orientation can be understood as a strategic direction that motivates employees to apply a shaping or controlling influence on their organization’s environment by endeavoring to co-create future markets and to influence
or demand trends. The authors present that control orientation can help firms to deal with unknown or new challenges successfully as they still endeavor to control these.

Wiltbank et al. (2006) present that in organizations that follow transformative strategy, actions are means driven rather than goals-driven. The authors describe effectual stakeholders as people who consider first who they are, what they know and whom they know, just in a way that Sarasvathy (2001) describes. Moreover, the authors suggest that effectual stakeholders’ vision several possible outcomes based on their current means in hand, and involve others whose strategies are driven by different types of identity knowledge and networks. Finally, the authors present that when interesting overlaps are discovered, and new combinations are being constructed, stakeholders commit those elements of their means that make advantageous the new reality being constructed, thereby facilitating the construction of new realities. Therefore, every stakeholder interaction can potentially change the original set of means and further, the shape of the new artifact or market being created (Sarasvathy, 2003; Wiltbank et al., 2006).

2.4. Business to Government Review

2.4.1 Business to Government

To have a better understanding of the dynamics happening within the business to government context, it is appropriate to stop over a moment and present what the current literature says about, its characteristics, features and main distinctions from the private markets (business to consumer/business). One of the first things we could observe is the limited amount of new resources available to business to government, also research that we found points to claim that this field has a low rate of publications (Kaplan & Haenlein, 2009). Still we had the possibility to find researches regarding the latest evolutions in the public sector, which transformed it to what it is today, which principles, values and philosophies guides it (Bouzas-Lorenzo, 2010; Kaplan & Haenlein, 2009; Lamb, 1987). This is to understand how public institutions think and behave, and having a first understanding on how private organizations must consequently adapt. Also, a brief analysis of suppliers of public institutions will be considered, so to get into the right perspective before getting to the analysis and discussion of our empirical results (Purchase et al., 2009; Uyarra, Edler, Garcia-Estevez, Georgiou, & Yeow, 2014).
Finally, a special focus has been placed on innovation within the public sector. In our frame of reference, we have argued how effectuation is a cognitive process first identified among expert entrepreneurs (Dew et al., 2009), agents which deliver a high rate of disruptive innovation to the market. So, to have a better understanding of innovation in this context, we have reviewed studies about innovation strategies within business to government markets, so to find how the public influences the private actors’ innovation delivery and diffusion.

2.4.2 Public Organizations: features and characteristics
Business to government market is commonly any business relation between a private business supplier and a public client organization. The presence of the latter actor is of crucial importance within the relationship, given the different goals and purposes that drives its actions and define its organization.

The consulted literature shows a broad array of main driving goals of public authorities: aim to fairness, transparency, public accountability, democracy, equality, efficiency while balancing interests within society (Bouzas-Lorenzo, 2010; Purchase et al., 2009) are the main driving forces which influences public actions within society. These values show how public entities are led by a complex set of non-financial goals (e.g. equality and democracy) instead of a mere for profit logic (Bouzas-Lorenzo, 2010). To a closer look concepts such as accountability and efficiency are values which usually are encountered mostly when discussing private actors in private contexts. According to several studies, this introduction of private values in the public institutions happened in the last decades as the effect of a general reform which started around the 1960s and 1970s (Kaplan & Haenlein, 2009; Lamb, 1987), and step by step penetrated the public sector.

The abovementioned reforms which shaped the public sector to what it is today, started when the major OECD countries faced a series of issues that pushed them to reform, integrating guiding values that are usual to the private market (Butler & Collins, 1995). It introduces a series of doctrines, such as New Public Management (Hood, 1991) and Public Sector Marketing (Kaplan & Haenlein, 2009; Lamb, 1987). The purpose of these reforms were to answer to citizens’ major criticism on public service inefficiencies and low quality, which led to protests through ‘taxpayers revolt’ and vote and participation (Lamb, 1987). There was a general sense that public financial resources were wasted on inadequate services, while the governments constantly attempted to rise the tax burden. This opened door to
private competition, which intercepted citizens’ demand for better services. The steady increase of competitive pressure and decrease of public state budget made clear the urge for change within public organizations (Hood, 1991; Kaplan & Haenlein, 2009; Lamb, 1987).

What it seems arising from the literature, is that these two streams of reform leveraged and influenced each other. Hood (1991) argues that New Public Management is possibly the result of the combination of two currents: new institutional economics and managerialism. Briefly focusing on the latter, it is the element which contributed to set administrative reforms based on professional management expertise (Hood, 1991), introducing these doctrines of management within the public sector. It is reported that in technical definition there has been a terminology shift from ‘public administration’ to ‘public management’, which implies a shift also for the relationship definition between citizen and state (Butler & Collins, 1995). Therefore, it is also observed in further studies that New Public Management is the realization of this attempt of importing concepts from the private management practices to public administration. Citizen are now seen as clients, and public administration has now a major market orientation, with goals and performances measured by new public managers (Kaplan & Haenlein, 2009).

Bouzas-Lorenzo (2010) argues that the introduction of Public Sector Marketing started decades ago increasing introduction of marketing management techniques first and philosophy later. Despite conceptually New Public Management and Public Sector Marketing are different and refer to distinct set of methods and philosophies, there is a correlation between the introductions of both in parallel (Kaplan & Haenlein, 2009). As an example, Butler and Collins (1995) argue that change from a controlled market (monopoly or oligopolies) to a perfect market condition, brought the new public managers to turn towards marketing as managerial tool to answer to competition. In support to this, Bouzas-Lorenzo (2010) argues that these tools became popular because public administration became responsible for developing new services to address clients’ needs and face competition effectively (Kaplan & Haenlein, 2009; Lamb, 1987).

So New Public Management redefined the outcomes, financial goals to better public budgets (Kaplan & Haenlein, 2009), and Public Sector Marketing enhanced new State-citizen relationship (Bouzas-Lorenzo, 2010). Citizens stopped being passive recipients of monolithic authorities decisions (Bouzas-Lorenzo, 2010) and started working together a new leaner
public administration in defining what they have to do, how to do it and how to control them (Kaplan & Haenlein, 2009). The citizens and their desires became the center of all organizational activities (Bouzas-Lorenzo, 2010), new services arose and new practices to guarantee the quality and accountability of administrative decisions were established, without missing the traditional non-financial goals which the State’s activities always took care.

2.4.3 Criticism to the integration of private values
This transition did not happen quickly nor without opposition. It is important to briefly consider the major criticism on the integration of these philosophies in the public sector. Integration of private values within the public sector has been a conundrum for many decades, and researchers expanding these subjects are aware that it was not a straightforward process nor happened without issues. (Lamb, 1987) argues that the application Public Sector Marketing would generate unique problems which would require unique solutions. It can be extended as well to New Public Management and to all the private values which has been integrated (or attempted to integrate) in public context. Even if many researchers worked to dissolve the strict association of private values with New Public Management and Public Sector Marketing, pushing on the benefits, opposition still argued against the compatibility of them. This debate slowed down the integration and adoption of these practices in an attempt to return to a past Welfare State model (Bouzas-Lorenzo, 2010).

The main point argued is that these techniques originated to maximize “for-profit” private goal, incompatible with the public principles of transparency, democracy, solidarity and equality (Bouzas-Lorenzo, 2010). The general fear is that these methods unbalance public’s actions towards market-dictated decisions, derailing public organizations from their original intended function (Bouzas-Lorenzo, 2010; Kaplan & Haenlein, 2009) Also, the difficulty to measure some of these public non-financial goals might actually favour the achievement of more practical and easy to monitor financial-goals (Bouzas-Lorenzo, 2010). Other critics more mildly argued that these solutions proposed to change the public organizations were ‘smoke and mirrors’, changing little and leaving the old problems still unsolved (Hood, 1991).

It is important to consider that most of the researches consulted observe that these philosophies need to be adapted to the public sector and cannot be applied integrally as they were formulated. In fact, they still answer to many effectiveness and efficiency demands
made by citizens, without necessarily clashing equity or democracy. Therefore there is still need to continuously address limitations so to improve integration and acceptance of these concepts in the field (Bouzas-Lorenzo, 2010).

2.4.4 Suppliers perceived value

Another topic that is beneficial to observe before the research could take place is the supplier perceived value in business to government context. The introduction of managerial practices within the public sector did not change public strategic goals, which still drive government’s actions and policies. This inevitably impacts the private suppliers that work within the public sector. (Purchase et al., 2009) argues how public strategic goals led to the definition of different procurement process with annexed evaluation methods, which do not allow transactions guided by mere profit maximization goals. Also, public procurements are a manifestation of the integrated private goals, since they guarantee transparency and accountability of public agents’ behavior. But government procurements are highly formalized bureaucratic processes, the so called red tape, which suppliers’ perceive as tedious and difficult (Purchase et al., 2009).

The concept of political accountability allows citizens to investigate any action took by any public representative, potentially causing a general turmoil due to managers´ resignation if found guilty of misconduct, leading also to political consequences (Kaplan & Haenlein, 2009). So private suppliers working in public sector face legal, formal and political constraints which makes the environment more uncertain and difficult to operate in (Kaplan & Haenlein, 2009). Moreover, (Purchase et al., 2009) argues in his research that suppliers perceived more value in their business relations with private actors, while government relationship were valued less. In fact the uncertain environment and political accountability bring public institutions to focus on single transactions which hinders the development of long lasting relationships (Purchase et al., 2009). Public authorities’ focus is on maintaining transparent and accountable relations with their business partners (Bouzas-Lorenzo, 2010; Lamb, 1987; Purchase et al., 2009), while private companies’ aim is to satisfying their clients efficiently and qualitatively, developing long lasting relationships that maximize profit (Lamb, 1987; Purchase et al., 2009).

Despite all the previous characteristics that make the public context hard and uncertain, there are also benefits for being private suppliers of public clients. In particular, (Purchase et al.,
2009) argues that public authorities expenditure is consistent and stable through time, mostly independent by the economic condition, and its purchasing power is as big as the supplied volume. This is valued positively by private suppliers, but it is unclear how in practically this benefit coexists along with the downsides of engaging in business with public clients (Purchase et al., 2009).

2.5. **Innovation in Business to Government Sector**

Although business within the public sector seems to be, on a first hindsight, mostly complicated, uncertain and difficult, there is potentially one positive result which recent researches support. The generation of innovative solutions in the public context has found new attention in the academic field as well as political environment, despite it is still overall understudied (Uyarra et al., 2014). In the last years, governments restarted promoting innovation through innovation policies, either supply side, such as subsidizing research investments, or demand side, like demanding specific innovative projects to private suppliers. This renovated interest has also been recorded by an increasing amount of studies which try to focus on which processes are more effective in fostering innovation, and which benefits are there for the public institution and private citizens (Uyarra et al., 2014).

2.5.1 **Innovation in Public Sector: Demand Side for Innovation**

As discussed in the previous paragraphs, the introduction of public sector marketing and new public management brought a shift in values as well as organization and actions. This change brought governments in a new scenario in which they redefined their relationship with private citizens and organizations in relation to them. One of the features introduced with managerialism discussed in the previous paragraphs, public accountability, try to encourage an honest and correct behavior. Therefore, it is in public managers and politicians’ best interest to promote policies which are beneficial to society. Despite innovation has proven to be in the long term beneficial to society and private markets, still a culture of short-term focus and risk aversion is dominant (Edquist et al., 2015; Mulgan & Albury, 2003).

Innovation is crucial because it allows to develop improved services which meet citizens’ demand for increased efficiency and effectiveness of public services (Bouzas-Lorenzo, 2010; Lamb, 1987; Mulgan & Albury, 2003). It also keeps public sector competitive against the private and constantly developing sector, fulfilling unaddressed needs, or effectively changing how they are currently served (Mulgan & Albury, 2003). Governments can set their
innovation policies in two main ways: either innovation is supported more on a supply side (Edquist et al., 2015) using tools such as fiscal measures, public financing of research and development, support for training, networking (Edler & Georgiou, 2007; Edquist et al., 2015); or by demanding through public procurements for innovative solutions (Edler & Georgiou, 2007). Focusing on this last public tool, studies recognized the long term benefits from spillover of technological advancements to private markets (Bakici et al., 2013), increased urban and regional competitiveness and business attractiveness (Lember et al., 2011), and a general increased efficiency in public services to the private citizens (Edquist et al., 2015; Lember et al., 2011).

Despite these long-term benefits resulting from innovation policies on the demand side, studies show that public institution took little advantage of demand side measures (Lember et al., 2011). The reason possibly lies, as abovementioned, focus on the short-term of public managers and rigid bureaucracies that frame the public sector. In fact, innovation does not fit either with short term views nor too much control: political system could interfere dictating changes to favor political needs (Edquist et al., 2015); excessive risk and costs related to development of innovative solutions might clash with austere budgets (Bakici et al., 2013, 2013; Edquist et al., 2015); and red tape bureaucracy sets rigid prescriptions that limits trial and fall practices of innovative solutions (Bakici et al., 2013; Edquist et al., 2015).

This can be overall resumed with an overall attitude of risk aversion, poor risk management and lack of competence in handling complicated tool (Edquist et al., 2015), favoring innovation support rather on a supply side which are easier to handle and safer to manage (Edquist et al., 2015). From a suppliers’ perspective, though, governments which follow standard win/lose contracting, bring no benefit in innovation process (Purchase et al., 2009). Because any innovating company invests a lot of effort in managing risk and uncertainty in developing something that was not formulated previously, but if the public client does not purchase and support innovative solutions, the burden remains on the private supplier, justifying the lack of innovation within the sector.

2.5.2 Innovation and Public Procurement for Innovation

A topic that has been found relevant in this frame of reference is the public procurement for innovation. The reason lies in the apparent ability to provide innovative solutions whilst the
bureaucratic boundaries, bringing both public and private to collaborate, delivering the above mentioned long-term benefits. Despite these barriers and limitations, it appears that the benefits of innovation demanded and fostered by the public sector is becoming evident also to law makers, for example, notices how only recently demand based innovation is becoming central for innovation policy in the Organization for Economic Co-operation and Development (OECD) (Edquist et al., 2015; Lember et al., 2011; Sørensen & Torfing, 2011).

Despite public procurement for innovation is not a recently introduced tool (Lember et al., 2011), it has been strongly underused for the same reasons above mentioned: risk avoidance from both public and private actors, limited budgeting, limited skills and ability to manage the process, short-term focus of public managers. It is observed how to foster innovation, public institutions still prefer policies which focus on supply side (Edquist et al., 2015; Lember et al., 2011), despite it is increasingly recognized that demand side policies, as public procurement for innovation, bring longer term economic and social benefits: public demand for innovation can make services more effective and efficient, incentivize industries to invest in innovative solutions with important spillover effects into the private sector, fostering export and diffusion within markets (Edler & Georgiou, 2007; Edquist et al., 2015; Lember et al., 2011). Therefore a demand based innovative policy develops not only an innovative solution to a need, but also stimulates the private industry investing, becoming a highly reputable first user (allowing spillovers to local and foreign markets), rising also the entrepreneurial reputation of the local-regional urban area, attracting new unsought potential opportunities, developing networks and clusters and generating a virtuous cycle that feeds itself, therefore making public procurement for innovation a mostly desirable innovation policy tool which could make public sectors important sources of innovative solutions (Bakici et al., 2013; Edler & Georgiou, 2007; Lember et al., 2011).

2.6. Limitations for Public Procurement and Risk Avoidance

Classic procurement policies characteristic might limit the possibility of innovative solutions to be proposed (Edquist et al., 2015). The reasons can be observed on the barriers perceived by private suppliers to public buyers, which provide an accurate perspective on how this context limit certain outcomes. In (Edquist et al., 2015) study, pre-procurement communication and overall early interaction were graded as more important than the process itself to propose a new solution, since it would allow freedom of interaction and innovative ideas could result from it.
Procurement is overall a complicated bureaucratic tool which tries to guarantee all the main strategic goals mentioned in the previous paragraphs, which several studies seem to agree it is a complicated tool which only advanced administrations are able to apply (Lember et al., 2011) that already.

2.7. Effectuation and Innovation in Public Sector

A connecting point between the theories of effectuation with public innovation theory can be noticed in a common trait studied in both theories: strategic partnership and exchange of knowledge between several actors (public and private in this case). Supporting this idea, we bring several points derived by the literature we reviewed. As abovementioned, public institutions pursue a different set of strategic goals, which involves as well accountability, transparency, equality, democracy and fairness (Purchase et al., 2009), and this explains why public institutions set up bureaucracies, so to regulate their relationship so to guarantee those principles are followed also in public procurement processes. Studies consider this as a benefit for public institutions’ suppliers, because the volume of goods and services demanded (in advanced economies) is high and consistent through time (Purchase et al., 2009). Yet, there is less flexibility, efficiency and freedom within procurement decision (Purchase et al., 2009). Despite some steps towards a public procurement for innovation were made in the last years, current public procurement policies are highly regulated to follow budget and strategic goals, not allowing to reach higher social and economic goals such as innovation (Lember et al., 2011). Therefore, with improper tools and skills to evaluate innovative solutions, the presence of tight bureaucracies might kill an innovation perceiving it a too risky and expensive solution (Bakici et al., 2013; Lember et al., 2011; Mulgan & Albury, 2003).

Though, there are many reasons to believe that public procurement for innovation generates wide long term national-regional-urban economies and social benefits. And this is due to the creation and/or development, through active demand of public institutions, of networks that are key factors for innovation systems (Bakici et al., 2013; Edler & Georgiou, 2007; Edquist et al., 2015; Lember et al., 2011). The importance of networks lies more in the interactive environment created, which allows to focus on needs and developing a better procurement area (Edquist et al., 2015). In fact researchers argue that using public procurement for innovation this element of interactivity between public and private is what triggers innovation, because it allows to spot and translate challenges into functional performance.
requirements of the procurement (Edquist et al., 2015), which allows suppliers to deliver any solution they believe could answer the need (Edler & Georghiou, 2007).

3. Methodology

We introduced our research question and our frame of reference, realizing what theories and researches are out there, and which ones would useful to understand better the context of our firm. So to be transparent in our research, with the help of the metaphor of the “tree cross section” (Easterby-Smith, Thorpe, & Jackson, 2015) Furthermore, we will explain our research design starting from ontology and epistemology (the core of the tree), passing through the methodology, research methods and techniques coherently choose to answer our research question. We will stress the reasons that led us to pick a perspective above another, a method over another and what measures have been taken so to guarantee a trustworthy qualitative research, and demonstrate the coherence of our design.

3.1. Research Philosophy

As previously mentioned, to correctly define our methodology, it is better we explain which assumptions about reality and knowledge we made. In other words to set all the features of our research design starting from clarifying our core decisions and perspectives starting from ontology and epistemology, the core of the “tree cross section” (Easterby-Smith et al., 2015).

For our research design, we chose the relativist ontology which by its definition, reality is made of multiple truths, and facts depending on the perspective we observe (Easterby-Smith et al., 2015). We want to see if a process such as the effectuation, which is considered an innovative effective process within other types of market (business to consumer and business to business), is still as effective within the business to government market, which we demonstrated to be different by the nature of governments and public institutions. Therefore, we are assuming our firm’s perspective, and see if a truth valid in another context is still valid in business to government context.

Considering our research purpose, the object of our studies and our ontology perspective mentioned above, the constructionist epistemology best suited to shed light on our research question. The reason lies in the fact that our attempt to test a process in a different context from which it is designed originally for constitutes a new perspective, leading this theory to might (or not) work as predicted. Therefore, we are looking for an existing theory expansion,
extending it to a new context and allowing us to have a better understanding of the potential of this same theory, or its limitations. As well, the theory we are considering (effectuation) can be considered as a human invention, a process, a theorization which has been designed to achieve an end (sustainable radical innovation). Since this end is desired by the firm we are studying, and we have observed that there is yet no evident theory that extends effectuation in business to government, we aim to test the efficacy of this theory in it.

3.2. Methodology: Research Engagement in Action Research

In this section we will discuss which research techniques and methods we have grouped together to provide a coherent research so to answer our research question and fulfilling our purposes (Easterby-Smith et al., 2015). We will provide the reasons that led us to design our methodology as it will be presented and discuss its weaknesses, as well as how we operated to counteract and limit its flaws.

3.2.1 Action Research

The reason behind choosing action research as methodology lays in an agreement we had with our case company about them being interested in improving their innovativeness and bringing them to develop more innovative and risky products to their markets. According to Eden and Huxham (2006), the distinguishing feature of action research is in researchers being involved together with organization’s members in a topic which it is concerned about and wants to take action. Thus, researcher assumes a second title of consultant/facilitator, and the result of its involvement is presumed to impact structural organization or behavioral.

Criticism often argues that this methodology generates too unique studies which are hardly repeatable, therefore lacking rigor. Yet, it provides a richness of insights that other methodologies lack or trivialize and since the theory is developed through interaction with a case organization, it has a higher practical value for it (Eden & Huxham, 2006). This is also the reason behind choosing action research as methodology: our case organization was interested in the development of a research which could provide findings to improve their innovativeness, and the hope to get better understanding on how their market influences innovation practices, given its peculiar features.

Yet, as Eden and Huxham (2006) argues, our primary commitment is still to contribute and advance knowledge by giving some general implications of our study.
Being aware of this main criticism, we took care to comply as close as possible with 15 characteristics of ‘research oriented action research’, defined by Eden and Huxham (2006), to focus our effort in to the design of an internally and externally valid research. They are used as a checklist to which we tried to comply. These characteristics are divided in four sections which define key feature of action research (1st section), outcome and processes (2nd section), distinction from other organizational studies and other forms of action research (3rd section), nature of reporting (4th section), (Eden & Huxham, 2006).

A last note about these characteristics is that they are an ideal representation of a research oriented action research, and they are demanding for a researcher and it is unlikely that it will comply perfectly to all of them (Eden & Huxham, 2006). We will eventually address this topic again in our limitations section.

As stated by Eden and Huxham (2006), context and history are defined differently by different observers and actors in the situation. Therefore, understanding the history and the central variables determining the peculiarity of the context is important when conducting a research oriented action research (Eden & Huxham, 2006). In the following section, we examine further in detail the history of our case company and our research and the context specific variables that should be considered when interpreting our results.

3.2.2 Description of the Case Organization

Our case company was founded after a merge between a Dutch technology company that is specialized in data analytics and a Swedish company that is specialized in traffic enforcement technology solutions. The merge of these two companies was completed only recently and the process has created plenty of hurdle, such as managerial changes and big strategic changes inside both companies, which are now functioning together as a one bigger group. Both companies had their focus in improving road safety, but the technological focus was different from the beginning.

Nowadays the merged company is aiming to serve both the clients in the mature market, but as mentioned before, one of the big goals is to move on the Smart City industry, which could be defined as emerging market. Need to introduce more radical innovation and to find ways
to work under goal ambiguity and high uncertainty evoked the managers’ interests towards strategic approaches, such as Lean Start-up, that would provide the necessary flexibility and risk management. Our initial idea was to create a study about Lean Start-up in business to government context, but as we soon noticed, this type of study would have required more cycles of influence for creation of reliable and meaningful data. Therefore, we shifted our focus back to more academic sources and chose to study effectuation, which is a very similar approach compared to Lean Start-up. The link between effectuation and Lean Start-up will be discussed further in the discussion section.

The company headquarter is located to Sweden, and it has subsidiaries in the Europe, Australia, United States and the Middle East. The company is working in the field of the enforcement technology solutions and planning to expand its business to the new era by using existing know-how and technology for new purposes. The company is a global player, and they have business activities in Europe, United States, Asia, Australia, Middle East and Africa. Global scope is necessary for the business because of the limited number of clients. Most of the clients represent public organizations, but some commissions come from the private organizations as well, yet public organizations are the target clients of their products.

The company has a wide know-how about its enforcement technology and its operating market, and it observed a new rising market’s trend, showing to us its willingness to use its know-how and technology to access early in this new market. We choose this organization because they currently are working both in a very traditional public industry while simultaneously showing active interest to topics such as innovation and how to employ it in the emerging concept and industry. Both high and low innovation contexts should be well presented in our case organization. Traditional industry, the market and the challenges are already well known, but in a new yet nascent industry, the possibility to follow traditional approaches as market research and prediction is far more difficult and limiting if not impossible in some cases.

Another reason that led us to design this research for this organization was their interest and willingness to learn best practices to foster higher degrees of innovation in their current (and new) market. Also, our observations which brought us to start this project derived from the fact that our case company has been producing mostly incremental innovations, which means a mere adding of new features to existing product base. And the management of the company
is aware that entering an untapped or non-existent market might require approaches that differ from those that the company is using today. Another observation that led us to choose this case company to our study is that we believe that their business environment seemed to hide part of the answer in why innovation was limited to incremental, and therefore the solutions needed to be investigated starting from analyzing their practices in a business to government context.

Given the high interest in the topic by the organization, we were granted access to speak with experienced managers and use them as subjects in our research for several purposes. We worked together with Swedish head quarter, but at the time prior our research formulation and running we also had the chance to interact with people from another European subsidiary, leading us also to narrow down our focus and object of the research. In this medium sized company, we had access to the right people and information any time needed and their direct interest and involvement to the topic brought them to actively help us to accommodate our research needs. Great accessibility and easy communication with contact persons enabled us to conduct a throughout and comprehensive study, within the limits of time and skills.

The context specific variables of our study were already discussed in the literature review and will be further discussed in the analysis section. To sum up, limited number of clients, high competition, regulatory environment, global aspect of the business and the fact that our case competition was built around old product and mature market should be considered as specific variables for this context. The backgrounds of the participants should also be considered, as well as the fact that our case company is producing products that further produce digital material that is used as ‘hard evidence’ in trials. Therefore, regulations and practices that are typical for law enforcement industry should be considered as context specific variables.

3.2.3 Research Methods and Techniques
The chosen methodology implies that our activity mainly focused on gaining primary source data through close interaction with the organization we worked alongside. This means that we designed the research so to collect as many qualitative information as possible. The main source of our qualitative data, thus, was provided by two series of interviews prior and after the experiment, observations and interactions with the Subjects involved in our experiment,
interviews and, finally, the judge. To receive effective and in depth qualitative data, though, we focused on developing a relationship based on trust and transparency with our research participants so to guarantee a rich and unbiased qualitative data collection. In the next paragraphs a more in depth look is given to the methods we chose, their critical limitations and how we attempted to balance them.

3.2.4 Participant Observation

We declared since the beginning that our research is an action research designed around the 15 characteristics defined by Eden and Huxham (2006), to guarantee internal and external validity. Therefore the nature of our research is of a high interaction with the field, which according to Easterby-Smith et al., (2015), is defined by the participant observation method, which provides in depth documentation of moments in which action and belief meet, allowing us to access to accounts that were missed from the interviews (Easterby-Smith et al., 2015). We were given a desk in the case company’s offices to which we had free access. This allowed us to integrate our qualitative data with field notes and informal conversations with other employees, allowing us to individuate the best Subjects to participate our experiment. Our use of participant observation method is close to how ethnographic research employs it (Easterby-Smith et al., 2015) and action research shares the same level of in depth of data as ethnographic research, despite the purpose of the research is different (Eden & Huxham, 2006).

3.2.5 Interviews

The main method for creating qualitative data was semi-structured interviews, which we used to form an understanding of the current company’s practices within the market, ideas and opinions regarding several topics of our interest. The subjects of these interviews were experienced managers who had a comprehensive understanding of the business and the role of each employee. We chose to use the Sales Managers in our experiment because they are key figures within the company and they work close both to the customer and their colleagues, therefore owning comprehensive understanding of the daily business and the products. The managers interviewed were chosen also because they were to be employed as subject for the experiment, and we saw benefit to familiarize ourselves with their ideas and know more about their experience within the context.
Semi-structured interview leaves opportunities for identification of non-verbal clues and allows our subjects to elaborate more freely about their perspectives (Easterby-Smith et al., 2015). Since our goal is to find out whether business to government context has an impact on the applicability of effectual approach, our subjects help to form a holistic understanding of business to government context and its influence on their ways of working. Therefore, we decided to leave room for further elaboration and follow-up questions in case interesting patterns and topics would arise. Semi-structured interview is an interview method that can provide us the necessary degree of flexibility (Easterby-Smith et al., 2015). The formation of interview questions is crucial in this type of study to avoid the “loading” and bias (Wengraf, 2017). Therefore, we collected the necessary material by using interview questions that were indirectly related to our theory. We present full interview procedure is in Appendix B. In addition to the pre-designed questions, we provoked the interviewees to reflect more on their experiences with intuitive follow-up questions.

Semi-structured interview has its basis on the human conversation, and the method enables the skilled interviewer to evoke the fullest response from the interviewee by modifying the pace, style, and ordering of the questions (Qu & Dumay, 2011). We acknowledge how our limited experience as interviewers probably caused some procedural mistakes to happen, we still tried to reduce them by letting outsiders to proof read our interview guideline and by practicing before the actual experiment. According to Qu and Dumay (2011), different interviewers can collect different responses from same interviewee, depending on the way the questions are asked. This is one of the major weaknesses of semi-structured interviews, and we acknowledge this as a limitation of our tool.

3.2.6 Experiment

Given the active interest of the company to improve their innovativeness, and our focus on effectuation process as base of entrepreneurial behavior, we developed a training focused on teaching effectual process; a case competition where we observed the solutions provided by the trained and an untrained subject; and together with an external judge evaluated which solution was best. While the problem-solving evaluation is meant to understand which process (effectual or causal) is being used within the firm, the independent judge will also allow us to triangulate which values and ideas are dominant within the firm and if they might be an obstacle to innovation, and enrich our data. The complete process is run in English.
3.2.6.1. Sample Size

We chose to run an experiment with sales managers because they are the most exposed to the business to government context employees within the company. The availability of sales managers in the company was limited, out of a total of three we managed to involve only two subjects for the experiment, plus one judge from the product development department to evaluate the solutions of the subjects. We will name the two sales managers in this research as:

- Subject 1, he has at least a decade of experience within the firm and of public markets around the world (Middle East, Asia, Sweden);
- Subject 2, is the trained subject, he works in the company since less than two years, lacking context and company experience; he covers similar markets and mansion as Subject 1;
- Judge, engineer in the product development department, as Subject 1 it has wide experience within the company, but from a distinct perspective compared to the previous Subjects.

The reason to train Subject 2 lays in his little experience of the business to government context, we assumed that he would be easier to influence and change his practices and routines within the firm. On the contrary, Subject 1 is too experienced to influence in such limited time. Also, Subject 1 constitutes the ideal ‘control subject’ to compare the results of our trained Subject 2, since his wide experience would bring him to follow his usual company’s routines.

Despite we had time limitations which did not allow us to involve the third sales manager (because based in another office and rarely in our town), limited the collection of more perspectives. Our effort, therefore, was focused to capture the most detailed image of the problem-solving and decision making practices of the accessible Subjects. Therefore, due to the depth of data collection gathered through action research methodology, we believe that our sample was optimal given our time.

3.2.6.2. Training Session

Sarasvathy (2001) argues that expert entrepreneurs learnt effectuation process through practice. This implies that, in theory, we should be able to influence the cognitive problem-
solving process of our subject so to learn to effectuate and therefore behave as an ‘expert entrepreneur’. Thus, in the case competition our “effectuator” should differ from the control subject, which instead should provide understanding on the ‘corporate’ problem-solving.

A subject was selected prior the case competition. A training was developed using an online effectuation explanatory video, two effectual exercises to stimulate effectual logic practice (of increased difficulty) and a homework to keep practicing the effectual logic taught. We were careful to not disclose elements nor content of the case competition during the training, as to avoid any advantage or preparation of the subject which would alter future results. A complete description of our training material is presented in Appendix D.

3.2.6.3. Case Competition

Kool and Agrawal (2015) describe experimentation as an important data collection method that is used in both social and natural sciences. The method to conduct an experiment is called experimental method. The authors define experimental method as a method where the experimenters manipulate one or more variables to see its/their effect on another variable. Haslam and McGArty (2001) point out that experimental method has been used for at least past 100 years to add scientific accuracy to social psychological research. The authors specify that experiments have been used to diminish the methodological uncertainty in causal relationships between variables and the method has proven to be especially useful in addressing the impact of social contextual variables above-and-over individual differences. Like any method, also experimental method has its limitations. According to Haslam and McGArty (2001), experimental method might be problematic when experimentalists (1) define uncertainty too narrowly, (2) emphasize uncertainty reduction but (3) neglect the process of uncertainty creation, which is equally important aspect of the research design.

The setup of our experiment is inspired by another study made by Dew et al. (2009), in which the authors organized a case study to map out the problem-solving approaches used by expert entrepreneurs and MBA students, who were asked manage an imaginary company called “Venturing”. The aim of the experiment was to recognize which processes were being used to solve uncertain problems such as identifying the target market when information is ambiguous.
We chose to design our case competition based on the study of Dew et al. (2009) due to our need to identify the problem-solving approaches used by the participants of our experiment. The firm to be managed is the case company they are working in; therefore, their business context is the business to government. We ensured that the problem-solving situation that we created was designed to be very realistic and typical of their type of business. Each subject was alone while performing at the experiment and was requested to speak out loud while reading the case and answering to its questions. We did not comment nor get involved until the Subject ended to answer its assigned questions. We added, on suggestion of the judge, two hidden questions to represent a systemic uncertainty factor. The entire situation was recorded with a video camera and tape recorder. Further details about the experiment can be found in Appendix A.

3.2.6.4. Evaluation Session

After running the case study within the company, we organized an evaluation session with the judge. The judge worked in a mansion of product manager for five years, and therefore he had wide understanding about his company’s processes, the business environment and the technology they sell. The evaluation session happened in a meeting room with only him, following ethical standards for qualitative data described in the methodology section, and we ensured that he was not aware of who was the trained subject. After going through the evaluation template previously developed and agreed with him via e-mail, evading any eventual doubt left, the evaluation of the two Subjects started. He evaluated each subject right after he saw the video recording of the case study solving. This allowed the judge after the first video to end, to become accustomed to his task while evaluating Subject 1, also to assure that he fully understands his task when Subject 2 review started. The detailed template provided and the results assigned to both subjects can be found in the Appendix (see Appendix C).

The initial purpose described within the methodology was the first attempt of the researchers to establish a superiority of the effectual strategy over the causal in terms of solution provided by one of the two subjects to our case study. The case, as explained in the methodology section, attempted to recreate a highly uncertain situation within the business environment, which was as close as possible to reality. To recall briefly the purpose of the experiment, was to highlight which processes were applied to solve by an experienced subject (Subject 1 in
our case) and a trained subject (Subject 2). The judge’s objective was to evaluate and point to a superior strategy to deal with this specific case.

Concluding our experimental process, we designed an evaluation session together with the judge. We reproduced the videos recorded in each session and recorded the judge’s evaluations for further analysis. He evaluated the performance of our two subjects based on an evaluation template we developed based on the previous studies (Dew et al., 2009; Sarasvathy et al., 2008 & Sarasvathy, 2001) and the feedback from the judge. In specific he evaluated the strategic planning aspect, such as risk-management, budgeting and market communication. The Evaluation criteria were elaborated so to establish which strategy was superior from the perspective of the firm (represented by the judge). This allowed to focus on specific features of the differences in the later analysis.

![Figure 2 Structure of the experiment](image)

### 3.3. Coding

Content analysis is known as a tool that allows the researcher to construct systematic interferences from qualitative data that is structured by the sets of concepts or ideas (Easterby-Smith et al., 2015). In content analysis, researches either derive the relationships and meanings of the concepts or ideas from the pre-existing theory or hypothesis, from the data itself or from the research question (Easterby-Smith et al., 2015) or induct the codes directly from the sample (Thomas, 2006). Inductive approach to coding leaves room for
emerging research findings that may arise from dominant, frequent or significant themes inherent in raw data (Thomas, 2006) and we decided to use this approach for finding the codes for business to government, which is our third main theme that we are interested in. We chose to use inductive approach for business to government, because we had less strong theoretical backup for the theory in this corner. Inductive category development enables the researcher to develop the categories as close to the actual material as possible and to formulate the categories in terms of the material (Mayring, 2000). For effectuation and causation, we found plenty of strong theoretical backup and therefore we used deductive coding to study further Effectuation and Causation.

Thomas (2006) notes that when using inductive coding, it is up to researcher to make decisions about what is important and what is less important in the data and therefore different evaluators might come up with findings that have no overlapping components or that are not identical. In inductive coding, the range of possible interpretations of the data is constrained by the evaluation questions, but inductive content analysis should not be used for testing a specific theory, model or hypothesis (Thomas, 2006). Too restricted coding guideline and too much reliance on quantification might, on the other hand, reduce the accuracy of the method (Kracauer, 1952). In our case, the relatively small sample size might also cause some difficulties to the analysis. Our research objective is to set a frame for the future studies, but it is worth noting that our findings are not generalizable and it is up to the future studies to verify the conceptual idea that we are developing here and turn it into a generalizable theory.

We read the interview transcripts several times to identify relevant themes and categories. Systematic and throughout reading and coding was used to let the major themes emerge from the text. All the transcripts were studied by both researchers and afterwards we developed the coding frame. When new codes emerged, we changed the coding frame and reread the transcripts and coded them according the new frame. Our coding approach enabled us to identify major themes, relationships between themes, and themes that were important to participants. We used this process for category development and once we had come up with the final categories, we conceptualized them into broad terms. The detailed coding agenda among with the explicit definitions, coding rules and examples are presented in Table 1 (p.37).
3.4. Methodology Critic

It is important to highlight our awareness of the limits of our methodology, and establish the principles by our research has been conducted and the rigor of our qualitative data. In order to comply with this we followed the principle of trustworthiness, which represents the virtues of qualitative terms (Given, 2008).

3.4.1 Generalizability

As briefly argued earlier, action research is criticized for being a non-replicable and its conclusion too bounded to the specific context of research, as well being too focused on action-oriented rather than research-oriented (Eden & Huxham, 2006). Eden and Huxham, (2006) argue that a researcher in an action research can set bases of generality through recognition that multiple cases analysis can lead to a more general theory. Also the consideration about possibilities of application of the results to other contexts can make research meaningful to others, (Eden & Huxham, 2006).

3.4.2 Internal Validity

Related to earlier critics, the fact that action research focus on action rather than expanding knowledge, making so that the qualitative findings are not accurately represented for research purposes, due to an excessive focus on the action (Eden & Huxham, 2006). Yet, the first 9 characteristics of the action research that we attempt to follow as close as possible, are concerned about the internal validity of the research itself (Eden & Huxham, 2006).

3.4.3 Confirmability

To ensure confirmability of our action research, we described thoroughly and clearly the methodology we chose, the empirical results we have obtained and the codes analysis we made. This to guarantee and clearly show that all our findings are related to the research activity we are here describing.

3.4.4 Dependability

Once again, the choice of methodology and method came with the understanding that in order to guarantee a dependable quality research so that any researcher might attempt to collect data in similar manner to ours (Given, 2008), the 11th characteristic of the 15 we are following argues how the dependability of an action research is function of both internal and external validity (Eden & Huxham, 2006), therefore our compliance with all 15 the characteristics should be a guarantee of dependability of our research.
3.5. Research Ethics

We made sure that no harm was caused to the participants of this research by giving them the option of full anonymity (which they agreed on) and asked for authorization for recording at each interview. Their identity was not revealed inside or outside the organization. Due to the confidential quality of information, we also kept the case organization anonymous in this thesis. We also respected the dignity of all the participants throughout the experiment through respectful behavior and respecting their time. Data was not and will not be disclosed to any third parties, including those inside the case organization, with exception of the judge which is considered part of the experience. Participation to our experiments was on voluntary base which was agreed previously with each of the participants individually. We ensured that each of the participants was fully aware of the purpose of our study and the use of the data before taking part in our experiment. Our study did not receive any funding, and we enjoy full independence from any third parties. We reported the progress of our research constantly both to the organization and to our supervisor at the University. Employees at the case company were aware of the reason of our presence within the organization. We followed the principles of honesty, transparency, and truthfulness when reporting our findings. We delivered a full consultancy report to the case company, but the content of this report will not be discussed in this academic report due to the agreement that was made with the company. The consultancy report was presented to the managers and the employees of the organization. We respected the privacy of the participants of our study by keeping them anonymous also in the consultancy report.

4. Results and Analysis

4.1. Empirical Findings

Our empirical findings will be shown starting from the feedback session with the case competition Judge, since the result of his feedback impacted on our observations, coding and further analysis.

4.2. Judge Feedback Session

The results clearly did not identify any superior strategy of any of the two subjects:

“I don’t think that none of them made anything dramatic in terms of combining resources in an unexpected way. I wasn’t really surprised or impressed.” (Judge).
Despite this major result which seemed to not confirm our initial efforts, we were still able to gain insights from the Judge’s evaluation and to make some interesting findings which still could answer our research question.

First, an initial element that has been noticed is the struggle to evaluate the solution processes applied by the candidates:

“They had completely different approach, again, with the with the different path they took from the start of the assignment.” (Judge).

Therefore, the focus shifted on what made these approaches so different, to which we found several key elements:

“he [Subject 1] doesn’t get stuck. And the market knowledge is obviously good, he has a lot of knowledge about the market, […] I mean, […] why he is so fast in coming to conclusion, because he’s done this with other customer so he has most recent answers and needs, […]” (Judge).

Supporting the Judge’s first opinion, we found further comments about this difference of approach:

“I think the solution he proposes is something he probably done a number of time so it’s not something completely new.” (Judge)

After clearly understanding the source of uniqueness of Subject 1 approach, the focus shifted on Subject’s 2 approach.

“So, I think he is more clear and the different alternatives he [Subject 1] presented there wasn’t as many combination. Subject 2 had it, went more thorough and had more combinations, more alternatives leading to the decisions being more awake (sic)” (Judge)

And more:

“He [Subject 2] was struggling a little bit, but that’s probably because the difference. […] how would you identify potential customers, he realized he had to start all over and Subject 1 skipped through that question
fast because he took a different approach to the assignment so, meaning … it was a bigger test for Subject 2 to be creative.” (Judge)

And asking if the reason could be a lack of experience of Subject 2 compared to Subject 1, the Judge replied

“but I think that’s a natural behavior as well, because if you think you know, then you might… it’s easier you rush ahead, and take a couple of quick decisions and go through, but if you feel that everything's uncertain, then you start more with asking questions.” (Judge)

Last important remark that will support later our analysis is regarding the ‘company’s way’ of doing things:

“He [Subject 2] was clear on that and that needs to be dealt with […] being there on fairs, exhibits, to start all over again, that is usually the way we deal with this.” (Judge)

In the end, the judge was not able to identify a superior strategy. He believed that either of the strategies, developed by our two subjects, could work in practice.

“We start with visiting fair or we try getting meeting with end customer through different channels, and I think that’s what he explained so… yeah […] they had completely different approach, again, with the with the different path they took from the start of the assignment. But both of their plans is definitely feasible” (Judge)

By these considerations of the judge, we have been brought to consider market knowledge as coding criteria in the transcripts and observe if there are consistent patterns with causal and effectual logics, with specific focus on uncertainty and, for later analysis to answer the research question two, innovation.

4.3. Coding

We used both deductive and inductive approaches when conducting our content analysis. The reason lies in the fact that we observed the problem-solving processes of Subject 1 and Subject 2, trying to recognize patterns defined in the theory of (Saras D. Sarasvathy, 2001). Hence, we have two categories of codes which have been deducted. Yet, since we are not
aware about how they were manifest within a business to government context, we inducted the coding of the business to government theme so to observe how these patterns interact with both effectual and causal processes. The coding guideline we used is presented here in table 1. Next, we will present further in detail the identification and coding of each category.

Table 1 Coding Guideline

<table>
<thead>
<tr>
<th>Sub Categories</th>
<th>Generic Categories</th>
<th>Coding rules</th>
<th>Main Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Pre-commitments (I would like to have some kind of commitment from their side…)</td>
<td>1.a Control Orientation Anything that refers to an attempt to influence, construct or co-create the future.</td>
<td>Cognitive process can be described as “creative” and the focus is on control over the future events.</td>
<td>Effectuation Definition: A set of means is taken as given and the focus is on selecting between possible effects that can be created with that set of means (Sarasvathy, 2001).</td>
</tr>
<tr>
<td>- Influencing the stakeholders (“You can actually influence…”, “It’s a bit manipulative…”)</td>
<td>1.b Affordable Loss Orientation Instead of predicting the possible incomes, the maximum loss is defined or the approach is based on step-by-step model.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- co-creating with stakeholders (it should be most likely technology partnerships with end customers…)</td>
<td>1.c Means Orientation Use of existing means or attempts to increase the pool of existing means (e.g. networking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Testing in the early stage (this process might even result a pilot project…)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- step-by-step approaches based on maximum loss (So and then it can get into the road map, product road map…)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Using existing resources in a new way (We found microphone solutions that we could implement into our sound radar system and…)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Leveraging from existing means (I would like to empty</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
my network to see what kind of free information I could get…)
- **Creating Completely new means** (…we had to join forces with someone else)

| - Finding benefits from unexpected event | 1.d Leveraging Contingencies Unexpected events are turned into opportunities. Uncertainty is not being conceived as a negative thing. |
| - Finding new approaches | |

- **Long-term vision** (we have concluded, it is a trend can be seen, we think…)
- **Anticipating customer needs** (if you know that customer is keen…)  
- **Analysis tools** (I would do a relevance to customer vs our competitive position, risk analysis…)

| - Predicting future income | 2.a Prediction Any tools or approaches that are used to predict the future. |
| - predicting possible losses | No attempts to influence the future. Focus on prediction and uncertainty avoidance. |

| - Identifying Competitors | 2.c Competitive Analysis |
| - Expected Return |  |  |  | 2.b Expected Return Attempts to predict future income or possible losses. |

**Causation**

Definition: A particular effect is taken as given and the focus is on selecting between means that can create this effect (Sarasvathy, 2001).
<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitors are easy to find...</td>
<td>Focus on <strong>finding</strong> the competitors and <strong>predict their moves</strong>.</td>
<td></td>
</tr>
<tr>
<td><strong>Comparison</strong> (what you offer is against the competition...)</td>
<td><strong>Positioning</strong> (...How are they organized, how do they do their sell and service to the customer)</td>
<td></td>
</tr>
<tr>
<td><strong>Imperative</strong> (you have to...)</td>
<td>2.d Avoiding Contingencies <strong>Attempts to limit</strong> the possibility of unexpected events, <strong>avoiding uncertainty</strong>.</td>
<td></td>
</tr>
<tr>
<td><strong>Avoidance</strong> (it is better to...)</td>
<td><strong>Unexpected</strong> (it might be that, it could be, that would be, you don’t know)</td>
<td></td>
</tr>
<tr>
<td><strong>Insecurity</strong> (I don’t see how, there is high uncertainty, is not that easy)</td>
<td><strong>Risk evaluation</strong> (high risk, low risk)</td>
<td></td>
</tr>
<tr>
<td><strong>Corporate innovation</strong> (develop features, innovation, product development...)</td>
<td>3.a Uncertainty <strong>Any reference to uncertain outcomes, risk evaluation of operations, events that potentially could happen in a business to government market</strong>.</td>
<td></td>
</tr>
<tr>
<td><strong>Market Innovation</strong> (function based tender, public procurement for innovation...)</td>
<td><strong>Subject experience</strong> (normally, in general, in our business, how we work, we did...)</td>
<td><strong>Business to government context specific attributes.</strong></td>
</tr>
<tr>
<td><strong>Subject example</strong> (examples, companies, partner, countries...)</td>
<td><strong>Subject opinion</strong> (it’s hard ...)</td>
<td><strong>Business to government context definition: topics related with business to government market theory, experiences of the subjects interviewed, sales processes and innovation dynamics.</strong></td>
</tr>
<tr>
<td><strong>Market Knowledge</strong> Sentences related to experiences, examples and personal opinions about business activities, business organization in the business to government context.</td>
<td>3.c Market Knowledge <strong>Sentences related to experiences, examples and personal opinions about business activities, business organization in the business to government context.</strong></td>
<td></td>
</tr>
</tbody>
</table>
4.4. Deducted Categories

4.4.1. Effectuation

Effectuation or “Effectual Logic” is a process that that be described as “creative”. Effectuators take a given set of means and fabricate the future together with stakeholders, who contribute by giving pre-commitments and thereby increase the initial pool of resources. Effectuation relies on principle of control. Prediction is an unnecessary activity, because the future needs to be known only as far as it can be controlled. At the corporation level, effectuation can be perceived as a strategic direction that emphasizes entrepreneurial decision making in five dimensions: means orientation, partnership orientation, affordable loss orientation, contingencies orientation and control orientation. Studies have shown that more innovative corporations tend to effectuate more.

We identified the following sub-categories from the sample and used them to explain more in detail the generic categories;

Pre-commitments, influencing the stakeholders and co-creating with stakeholders are sub-categories that describe attempts to control the future events.

Influencing the stakeholders: “You can actually influence the tenders' specification…”

Pre-commitments: “…so we could say ‘ok, by taking a percentage or fixed fee, we can provide you with the solution and you can issue more tickets’”

Co-creating with stakeholders: “We are also trying to find people who could speak for us. Sort of advocates who could participate into events and help to raise awareness in short term.”

“Testing in the early stage” and “step-by-step approaches based on maximum loss” are describing attempts control the possible losses.
Sub categories “using existing resources in a new way”, “leveraging from existing means” and “creating completely new means” describe the attempts to use the existing means effectively and attempts to increase the initial pool of resources.

Leveraging from existing resources: “And then the introduction itself to scale your local organization or partnership,…”

Step by step approaches: “…based on how successful you are and take it step by step into the market.”

Sub categories “finding benefits from unexpected event” and “finding new approaches” are sub categories that describe approaches where the subject is trying to find benefits from unexpected events.

Finding benefits from unexpected event: “…for our sake this would probably work for the benefit since we start from the very beginning.”

Finding new approaches: “Well I would probably start with going back to the customer and see if a private/public partnership could be …”

We deducted the generic categories from the effectuation literature, by following mostly the footsteps of Dew et al. (2009), Sarasvathy (2001) and Werhahn, Mauer, Flatten and Brettel (2015). The generic categories that we deducted from the previous research are 1.a Control Orientation, 1.b Affordable Loss Orientation, 1.c Means Orientation and 1.d Leveraging Contingencies. By using these generic categories as our guide, we mapped out the use of effectual logics both in interviews and in the actual experiment.

1.a Control Orientation: Anything that refers to an attempt to influence, construct or co-create the future.

“You can actually influence the tenders’ specification, that it is what we really want to do.”

1.b Affordable Loss Orientation: Instead of predicting the possible incomes, the maximum loss is defined or the approach is based on step-by-step model.
“But as previously said we will probably put it in different steps where we would...use this as gates, and we will need both put maybe some money but also time on each step before we see ourselves going to the next level....”

1.c Means Orientation: Use of existing means or attempts to increase the pool of existing means (e.g. networking.

“We found microphone solutions that we could implement into our sound radar system and ran a successful pilot project in Dubai.”

1.d Leveraging Contingencies: Unexpected events are turned into opportunities. Uncertainty is not being conceived as a negative thing.

“We would probably have a need for more time. I would take this as an opportunity actually, to do our groundwork before the project comes up.”

4.4.2. Causation

Causational logic, instead of effectual, is a more specific goal oriented logic. Its pillars, also coming from Sarasvathy (2001) theory of effectuation, became our deducted categories. Causal logic aims to reach specific desired cause through the implementation of a specific set of means. These might not all be available to whom applies causal logic. It also characterizes for being a process that instead of controlling its future tries to predict it as well as its expected returns, avoiding contingencies that might impede its success. It also focuses in finding competitors within the market and trying to predict their next move. Generic categories were deducted from the literature, whereas the sub-categories emerged from the sample. We identified the following sub categories from the sample.

Long-term vision, anticipating customer needs and analysis tools are sub-categories that were identified for the generic category “Prediction”. They describe attempts to form a vision about the upcoming events.

Long-term vision: “...it is a trend can be seen, we think...”
Anticipating customer needs: “…if you know that customer is keen…”

Analysis tools: “I would do a relevance to customer vs our competitive position, risk analysis…”

Predicting future income and predicting possible losses are sub-categories that are describing the attempts to predict the future incomes or losses.

Predicting possible losses and future income: “…the risk, cost risk benefit ratio that has to be considered…”

Identifying competitors, comparison and positioning were sub-categories identified for the generic category “Competitive Analysis”.

Identifying competitors: “Competitors are easy to be find…”

Comparison: ‘What you offer is against the competition…”

Positioning: “…How are they organized, how do they do their sell and service to the customer.”

Sub-categories imperative and avoidance are describing the degree of avoidance behavior. The first sub category “imperative” describes strong avoidance behavior, whereas avoidance describes milder version of the avoidance type of behavior.

Imperative: “you have to…”

Avoidance: “it is better to…”

2.a Prediction: any tools or approaches used to predict the future;

2.b Expected Return: any attempt to predict the future income/loss;

“It is quite easy to estimate that to embed in this feature it costs us fifty hours or hundred hours, or software development and so on.”
2.c Competitive Analysis: finding and analyzing competitors’ move;

“Because…other wise…we know that this would cause a shadow over our company and our products. Our competitors would definitely take this opportunity to talk about us in every meeting they attend.”

2.d Avoiding Contingencies: efforts to avoid uncertain events.

“One can assume that before our company or our product has been associated to the local partner and now we really don’t want it to be associated to the local partner.”

4.5. Inducted Categories
As briefly mentioned at the beginning of the chapter of deducted categories, categories of business to government context has been inducted from the text. We chose this procedure due to our interest in observing which new insights could emerge from our data (Hsieh & Shannon, 2005), so the defined categories are as close to our material as possible (Mayring, 2000). This allowed us to observe later in the research how the inducted categories relate to the previously deducted ones.

4.5.1. Business to Government
As we followed (Mayring, 2000) inductive category development process, we firstly developed a criterion of definition a main theme derived by our theoretical background: business to government theme. Through and iterative process, by noticing repetition within our transcriptions of experiment and interviews, we developed our first codes. Through an iterative process, we could refine our codes and organize them in categories which are going to be presented.

Unexpected:
This code represents uncertainty given by the business to government market. It was commonly introduced by words such as “it might be that, you don’t know, it could be,” which introduced an element of uncertainty and unexpectedness in their answer which justified their approach or decision.
Insecurity:
This code also represents uncertainty which usually was given to complete the experiment. It allows to spotlight the subject’s insecurity, the reasons and observe the consequent process applied to overcome it. It was introduced by terms such as “I don’t see how, is not that easy, there is high uncertainty”.

“There is no basic solution to just call to authorities and ask for that title and give you to information…it is not that easy”.

Corporate Innovation:
This code emerged within our interviews mostly when discussing about how innovation was considered and how it was reached within the company. This allows us so to recognize their approaches to innovation, more specifically, how it will interact with effectuation and causation category of codes, establishing patterns. This code is a collection of keywords such as “develop features, feature”.

“So, I would say that the focus has been since I am here is to increase the number of features in existing hardware”

Subject Experience:
This is one of the most important codes recognized, which represents all those sentences and affirmations of our interviewed subjects regarding their experience. The reason of its importance lies in the weight given to their decisions process in the experiment as justification. But also as backup of their affirmation in the first interview, the subjects often recalled experience. These prepositions and sentences contain a wide array of information about business to government context, which could be source of their effectual or causal processes. The key words are mostly “normally, in general, in our business, how we work, we did”

“Normally you customize for a project or a crossing or something, but there they want to be able to take as much citations as possible”

“normally, well, best case scenario is that you have a partner everywhere. But sometimes there are early markets where there haven’t been any procurements yet”
Subject Example:
While explaining their decisions or argumentations, it often happened that the subjects interviewed did support their discussions with examples. These are not necessarily true facts about business to government, rather tools applied to facilitate the understanding of their points. Given the consistent number we found in the transcripts we believed it was necessary to highlight them so to not be confused with subject experience. Key words “for instance”

“yeah, I mean if you want to enforce illegal U turn, for instance, you can either sell in a project and put development to solve this, for the project together with other stuff”

After a first phase of iterative coding, we categorized the above mentioned (and the other) codes into categories based on how they relate to each other (Hsieh & Shannon, 2005). We obtained the following three categories which will be following briefly described:

3.a Uncertainty: any reference to uncertain outcomes, risk evaluation of operations, consideration of extraordinary events that could potentially happen in business to government context.

3.b Innovation: discussions about innovation and how is pursued within the firm, or how it works within the business to government market.

3.c Market Knowledge: sentences related to experience of specific market features, examples, and general knowledge within the market of laws, public entities and business in business to government.

4.6. Analysis
In the previous section, we presented the empirical results of our case study and judge evaluation session. In this section, we will analyze our results through our frame of reference and attempt to provide an explanation about our finding so that our two research questions are answered. To remind which are our research questions:

(1) How does the business to government context influence the application of effectual process?
(2) What are the outcomes for innovation?
4.6.1 Effectuation in Business to Government Context

As mentioned earlier in the introduction section, effectuation is a widely-studied topic, mostly observed in business to consumer and business to business contexts such as high-tech, new venture creation and internationalization. However, as discussed earlier in the literature review, business to government context is still a highly-neglected field. In this first section our analysis will focus on the distinctive elements found in theory about the business to government context, and examine the impact they have on the application of effectual logic.

4.6.1.1 RQ1: How does the business to government impact effectuation process?

Important to our analysis was the fact that the judge evaluation session about the case competition. Despite he could not identify a superior action plans developed by the Subjects, he repeatedly commented how the difference in experience seems to be the reason for Subjects 1’s speed and brevity in the execution of the case. While Subject 2 (trained subject) spent more time to think and provide a more thorough solution. The overall results of the case study show that both Subjects apply both effectual and causal logics, which were used to solve the proposed realistic case competition.

The codes that most frequently appeared in the sample from the very beginning are “using existing resources in a new way”, “leveraging from existing means” and “creating completely new means”, which are codes referring to the generic category “1.c means orientation”. Both subjects in the interviews used to ground their approaches on means orientation, to build new networks or to leverage from existing ones. The reason they focused more on their means rather than acquiring new ones lies in the business to government context. In fact, the codes ‘3.a Uncertainty’ and ‘3.c Market Experience’ often provided appeared to other causal or effectual codes as explanation of their choices. Systemic uncertainty hinders the possibility to easily gather additional resources, thus the case company relies mostly on what they own and what/who they know. According to theory, business to government is an uncertain environment where public institutions focus on maintaining transparent and accountable relations of single transactions, hindering the development of long lasting relationships (Bouzas-Lorenzo, 2010; Lamb, 1987; Purchase et al., 2009). An additional code, ‘3.c Market Experience’, allowed us to observe how most of the theories lack to point out: the awareness of the small number of clients and high competition. This awareness brings
both of the Subjects to interrogate on the possible outcomes of their current set of resources, which according to (Sarasvathy, 2001) is a pillar of effectual practice.

As mentioned earlier, the judge observed how experience was possibly the discriminant between the two action plans. We observed that the experienced Subject 1 applied in his problem solving a mixed approach. In fact, to the previous codes ‘1.c means orientation’, ‘1.d leveraging contingencies’ and ‘1.a control orientation’ were present, showing an almost complete effectual process. In addition to them, codes referring to ‘2.c competitive analysis’ and ‘2.a prediction’ came up when developing an approach to the client. Codes ‘3.c market experience’ justify this addition as an attempt to understand the public client’s needs and observe the value offered by the competition. This to find the “sweet spot” (Subject 1) to fill and establish a transaction with the public client. It appears, then, that the causal approach is complementing the effectual process. Subject 2, instead, relied on a ‘purer’ version of the effectual process, having present all the codes of the main category ‘Effectuation”. Codes referring to effectual approach were identified more frequently in the transcripts of Subject 2, but there was still a minor presence of causal elements represented by, as Subject 1, ‘2.a prediction’ and ‘2.c competitive analysis’. We have not enough evidence to believe that Subject’s 2 ‘pure effectuation’ is the consequence of our training. We rather argue, according to the judge and lack of ‘3.c Market Knowledge’ justifying its decisions, that Subject 2 has less context experience than Subject 1 regarding the market of the case competition. Consequently Subject 2 developed a more thorough plan to deal with market uncertainties with the aim to gather information, while Subject 1, since its own experience, focused on decision involving also interacting with the public client.

According to corporate effectuation theory, young organizations, such as new ventures, tend to rely more on effectual logics and, as the organization gets older, the focus tends to shift more towards causal logic (Dew et al., 2008; Johansson & McKelvie, 2012; Werhahn et al., 2015; Wiltbank et al., 2006). In our case, the case company is not a start-up venture, thus the predominance of effectual practices cannot be argued with this explanation. Rather, based on ‘3.c Market Knowledge’ which shows that their market is rather ‘old’ and ‘mature’, ‘handful of clients’ and with ‘high competition’, we argue that in our case company Subject 1 and Subject 2 both integrate effectual and causal processes so to effectively manage systemic uncertainty due to unique public market features and characteristics.
According to theory, despite public institutions imported from the private sector management techniques and philosophies (Bouzas-Lorenzo, 2010), they still followed public strategic goals (e.g. fairness, transparency, public accountability, democracy, equality, efficiency). The result of integrating public and private methods and goals, resulted in complex tools which frames any business relationship with private suppliers. Public procurement is the most common tool for privates to sell their products. According to theory it is referred to as red tape and perceived by private business suppliers as a burden which limits the value perceived by their business relations (Purchase et al., 2009). Interestingly, codes relative ‘2.a prediction’ and ‘2.c competitive analysis’ constantly appears next to Subject’s 1 tender ‘3.c market knowledge’ codes, showing a correlation between causal practices and actions regarding tenders.

In our interviews, we frequently observed how public procurement is central in strategy development, given the fact that it is the only way to sell their products to public institutions. This explains the focus placed by both subjects to develop networks and increase their means, represented by codes ‘1.a control orientation’, ‘1.c means orientation’ and ‘1.d leveraging contingencies’: relationships are fundamental to reach sales opportunities. In fact, codes ‘3.c market knowledge’ show how the firm does not follow all public procurement available by itself, but delegates and relies on the support of strategic partners in different geographical locations.

This already agrees with a fundamental characteristic which is at the core of effectual theory: strategic partnership (Dew et al., 2009; Sarasvathy, 2001). We argue that to effectively survive in a business to government market, the case company must rationalize its efforts, optimizing its limited resource allocation leveraging on partnerships. This is observed in our experiment in which both Subject 1 and 2 used an effectual approach to seek for the information they needed and to establish their networks. The main difference, as abovementioned, was the use of causal elements by Subject 1 when discussing strategies to win public procurements and the public commission. Based on Subject’s 1 codes, ‘3.c market knowledge’ shows the willingness to successfully win a public procurement by setting as clear defined goals public client’s needs. Thus, the causal codes ‘2.a prediction’ and ‘2.c competitive analysis’ are used to establish a clear goal for the firm, so to create a business relation with a public client. This is reflected by causational theories, which argues how causal approach is useful when goals
are pre-defined, while effectual approach is employed goal ambiguity condition (Wiltbank et al., 2006).

Therefore we have enough evidences to argue that the effectual process employed by the hosting company differs from the version of Sarasvathy (2001) theory, by causal elements which appears to be adaptations to the public context. This adaptation allows to our case company to reach to new public clients with which it did not have prior business relations. This is also the situation within the case competition which we used to conduce this analysis. Through interviews we found codes ‘3.c market knowledge’ which indicate that the final aim of the host company is to build a relationship with the client based on trust, so to get the possibility to influence the public clients’ future tender specifications in their favour. Therefore, we spotted further ‘1.a control orientation’ effectual category codes when discussing the development of the newly established relationship.

So, finally, the analysis of our case competition empirical results highlights an effectual/causal approach applied to new public clients with no previous connections. But also, based on the interviews conducted after the case competition we are aware of the second step which the case company aims to in the long term, to which a deeper analysis will be provided in the next section, since it has relevant implications to the development of innovative solutions.

Interestingly, codes “corporate innovation” and “market information”, which are referring to generic category “3.d innovation” were identified from the sample, but what was missing were the references to completely new products, so called “radical innovations” (S. D. Sarasvathy et al., 2008; Saras D. Sarasvathy & Dew, 2005). We conclude that some practices within business to government sector are indeed hindering innovation.

4.6.2 Innovation within the Case Company

The second goal of our research is to observe how the frame of business to government context impacts innovation practices. Previously we observed how the case company applies effectual processes complemented by causal processes to anchor itself in the uncertain market and establish a business opportunity with a public client. Thus, it appears that this process is functional to the context. In this section, our analysis discusses how this adapted
process and the business to government context specific factors influence the production of innovative solutions. Our analysis will try to match theory regarding innovation practices with our previous analysis results plus empirical results, attempting to provide an explanation to case competition’s innovation attitude. All the further outcomes and observations are discussed later in the discussion section of our thesis.

4.6.2.1. RQ2: what are the outcomes for innovation?

The theory of effectuation, developed and introduced by (Saras D. Sarasvathy, 2001), describes a process applied by expert entrepreneurs which successfully launched a series of ventures. It is described as an exploratory process which focuses on what it is within the reach of the subject, trying to influence the environment while learning from it in the meantime (S. D. Sarasvathy et al., 2008; Saras D. Sarasvathy, 2001; Saras D. Sarasvathy & Venkataraman, 2011).

The outcome of our empirical results partially disagreed with the theory regarding innovation in the public sector. According to the theory (Bouzas-Lorenzo, 2010; Purchase et al., 2009) and confirmed by our study, public sector is a context where the client’s freedom to practice business is limited by the principles of accountability and transparency. As previously argued, along with competitive pressure, political influences and small number of public clients affect both directly and indirectly on the behaviour of the case company. We observed as result of this adaptation an effectual-causal process used to face the systemic uncertainty.

To guarantee public strategic goals, integrate with private managerial goals, complicated bureaucratic tools and procedures such as public procurements combined, not allowing the private supplier to innovate freely. According to theory of innovation in public sector, public procurements hinder innovation due to its rigid boundaries, detailed specification’s list, which do not allow the proposal of different solutions not allowing a discussion between the two parties. (Edler & Georghiou, 2007; Edquist et al., 2015; Uyarra et al., 2014).

The number of clients within business to government is relatively low and this, summed to public procurement process, results in a high bargaining power on the client’s side. In the empirical data, an important ‘3.c market knowledge’ code appeared nearby ‘3.a uncertainty’ and ‘3.b innovation’ codes, which emerged frequently in answers to innovation related questions. Our case company insisted that market investments are a considerable effort both
in terms of time and finances. According to the theory of Lember et al. (2011), public clients are focused on carrying out single transactions, which our case company argued to employ significant time and finances to, potentially, win. In our analysis, we recognized a strategy which allows the company to develop trust with the public client and allowing more interaction in the long term, which should bring to pre-commitments. Codes “pre-commitments”, “influencing the stakeholders” and “co-creating with stakeholders”, which are referring to ‘1.a control orientation’ support these conclusions. According to theory Edquist et al. (2015), pre-commitments communications and overall early interaction in the process are deemed more important for innovation, even above the type of procurement. The interactions between private supplier and public client could unlock opportunities in which innovation could be the outcome.

As abovementioned, our findings indicate that our case studied company applies within its effectual process a causal element so to forecast its clients’ needs. Codes referring to causal and effectual logic were often identified parallel to each other. We argued that the reason lies in the attempt to deliver a product which is closest to public client’s demands and transform it into a tender in their favour. First the predictive strategy is used to create understanding about the reality where the new client is functioning and once the relationship with the client is established, the more effectual logics of control are used to interact with a trusting public client. So, we argued that the causal elements are used to efficiently establish a new relation with a client.

The purpose is to build trust and reliability allowing them to discuss more openly about options, therefore allowing them to leave behind the causal component that we observed in their effectual process. Codes ‘1.a control orientation’ codes appeared near ‘3.c market knowledge’ codes describing their behaviour and actions with a public client with which they did more than one transaction. Apparently trust reduces the need to provide exactly what the public client is demanding, since a relationship has been developed. Yet, this behaviour seems not exploiting fully the opportunity given by such a closeness with their clients. The reason possibly lies in their cautious attitude, shaped by the uncertain environment. Codes ‘3.c market knowledge’ described how ‘3.a uncertainty’ codes are related to case company’s attitude to expect public clients to demand for innovation. Thus, following the rubrics of “market pull”, where the impulse is coming from the client’s side.
According to theory, public sector is perceived as bureaucratic, risk avoiding environment, which sees innovation as luxury rather than the possibility to improve the efficiency of its services and quality of life (Edquist et al., 2015; Mulgan & Albury, 2003; Sørensen & Torfing, 2011). According to our empirical finding, codes ‘3.b innovation’ showed innovations consisting in added functionality to existing product lines, therefore consistent to what theory argues. We could, thus, recognize that public sector is a low innovation context, which achieves incremental innovation.

When our case company described an established relationship with a public client, we observed effectual codes such as ‘1.a control orientation’ and ‘1.c means orientation’. They represented the considerable effort they say to place on influencing client’s preferences before the actual public tender is released, therefore taking advantage of trustworthy relationship. Subject 2 described a process of designing tenders to fit the product range and technology. This influence, represented by ‘1.a control orientation’ and ‘1.c means orientation’ codes, shows a strong effectual approach to a known client. Yet, the only sign of innovation was the introduction of additional functions to their product line.

So, overall, we noticed that for this company the effort to establish a foothold in a market and develop its network of partners is far riskier and uncertain than private markets. Subject 1 ‘3.c market knowledge’ code showed that it is ten times more expensive to create market presence, than developing a new product. According to theory and our analysis, we observed how public clients are risk avoidant and consider innovation rather like a luxury instead of an evolution of their services (Edquist et al., 2015; Mulgan & Albury, 2003; Sørensen & Torfing, 2011). This brings to a situation in which private suppliers are mainly focused on delivering strictly what the public client needs and wants, not taking additional risks to develop new product if not through pre-commitments. While public clients are strongly risk avoidant, therefore being exceedingly avoidant from demanding or accepting new product concepts.

4.6.2.2. Public Procurement for Innovation

According to theory, public procurement for innovation is a derivatite from public procurement which allows innovation to happen (Edquist et al., 2015). This still allows public clients to justify each of their purchasing decisions, and allows private suppliers to deliver
alternative solutions to a set of performance requirements (instead of specific characteristics of the product) (Edler & Georghiou, 2007; Edquist et al., 2015). According to our theory, public authorities rediscovered the usefulness of this tool and are encouraging its application (Edquist et al., 2015; Lember et al., 2011; Sørensen & Torfing, 2011). Despite, based on our theory, only advanced economies can prepare and use such a complex bureaucratic tool, there are recognized public benefits for society and the economy (Lember et al., 2011). But according to our analysis, instead, the main belief of the company is that public procurement for innovation is not a reliable tool. First and foremost, the belief is that public authority decision would be based on price, and according to theory, public authorities are mostly risk avoidant (Edquist et al., 2015; Mulgan & Albury, 2003; Sørensen & Torfing, 2011). Secondly, loosing competitors might appeal public authority decision’s, which would end up costing more than the actual project, rising further skepticism and resistance in using this tool.

Therefore, we could argue that focus shifts towards less risky and more demanded incremental innovations, which involves adding features to existing products. Successful innovation does not guarantee a deal with the client, and therefore it makes much more sense to leave the decision about future products to the client and instead focus on fulfilling the market’s current expectations in the best way. Optimal situation for a private supplier within the public sector when it comes to innovating, could be a long-term plan, a so called “product road map”, where the client commits to develop necessary solutions together with the company. This is however a hardly practical solution, since the company studied noticed that public clients are subjects to political influence, which according to theory (Bouzas-Lorenzo, 2010; Purchase et al., 2009) it directs their actions, therefore not allowing a continuous long term dedication to the relationship.

4.6.2.3. Short Term and Long Term Corporate Strategy for Innovation

As previously argued, codes referring to ‘2.a prediction’ and ‘2.c competitive’ analysis were found in topics regarding developing new relationship with a public client. But to a closer look, we have found some codes ‘3.b innovation’ which reported the existence of a so called short-term strategy for innovation, embedded within the sales processes when building a relationship new public clients. Which, as we explained until this point, is a process built mostly on an effectual logic with causal elements. The long-term innovation strategy, categorized as well within ‘3.a innovation’ code, is found alongside with ‘2.a prediction’
codes. This occurs also when the Subjects present the case company’s long-term innovation strategy, which is based on strong causal elements. In fact, both Subjects argued that they are attempting to develop an R&D department which works on next five years’ market trend predictions. It appears that the responsibility of this long-term innovation was entitled to this new department only, while the other employees seemed cut out from designing future products and services. According to theory, highly effectual organizations achieve control through non predictive strategies (S. D. Sarasvathy et al., 2008), and to encourage entrepreneurial behaviour among individuals within the organization (Werhahn et al., 2015). But in our case organization, the employees are used to conduct competitive analysis and attempts to predict future income observing which market trends could be recognized. This can be observed as a frequent appearance of codes referring to ‘2.c competitive analysis’ and ‘2.a prediction’.

However, as mentioned, in the short-term employees do enjoy high degree of freedom and trust in their daily work, and they are used to attempt some sort of control over their future by influencing the stakeholders (mostly their partners and public clients). But the definition of their role doesn’t foster effectual practices and entrepreneurial thinking in the long term because they appear to delegate the responsibility for long-term innovation in the hands of their research and development department. Sales managers are rather communicating the smaller updates or client specific needs to the engineers and sometimes they also notify about the requests that seem to come up more frequently. Still, the missing piece is the proactive way to produce and introduce future products. Highly innovative organizations in business to consumer sector are shaping the reality with constructive strategies that are not based on prediction, but rather on logics of control (S. D. Sarasvathy et al., 2008; Saras D. Sarasvathy & Dew, 2005). Based on the theory of corporate effectuation (Dew et al., 2008; Johansson & McKelvie, 2012; Werhahn et al., 2015) we classify our case organization as fosterer of incremental innovations, leaving unexpressed their full entrepreneurial potential and losing long-term benefits to society and the company itself.

Yet, according to theory, considering the strict legislations and high associated risk, it has been demonstrated that the responsibility for innovations is if demanded directly from the public organizations (Lember et al., 2011). Also, effectual processes are linked to entrepreneurship and introduction of innovative solutions, while in the public sector it manifests rather as an effective with some causal elements, which helps to manage the
systemic high uncertainty. Therefore, we observe that a full cycle of effectuation process seems too hard to be practiced due to the limited willingness by public managers to expose their office to risk and to pre-commitments to potentially wasteful innovations. Still, with a little more willingness to embrace uncertainty, it would give the freedom to private supplier to propose different solutions and experiment with them, which is the key factor in the original effectuation circle (Saras D. Sarasvathy, 2001; Saras D Sarasvathy, 2003; Wiltbank et al., 2006).

Overall the possibilities to introduce radical innovation are very limited. In business to consumer sector, the beta versions of products are easier and more affordable to build, since there are also more opportunities to cooperate closely with early adopters. For public organization, instead, it is far more difficult to acquire pre-commitments and be an early adopter. This is because neither side (private or public) is willing to take charge of development costs and bear the responsibility (political and reputational) of a potential flop within the development process on its own.

4.6.3 Framework for Effectuation in Business to Government Context

One of our main finding is that in the business to government sector, suppliers’ possibilities to construct the future in a same way as expert entrepreneurs do in the original effectuation model is limited. In business to government context, effectual approach is being used to identify possible partnerships and contacts from the new markets, but if the market and the

![Figure 3 Framework for Effectuation in business to government context](image-url)
clients are new, the company will employ first a more causal approach when creating the initial offer for the client. If the tendering process turns out to be successful and the relationship with the client is established, the process can be sifted more towards effectual logic.

The model presented in figure 3 represents the framework for effectuation in business to government context, but as we can see, this framework is rather a mix of causal and effectual approaches. The entire cycle starts when the company is first inventorying its existing means, such as technology, networks and employees. Next, causal approaches are being used to identify possible needs that the company could address. These points, such as issues related to road safety or problems with transportation in urban region, are being addressed in the early discussions with the client. Then, the management and the sales think about possible applications for the existing set of means. Initial goals are being created. Furthermore, competitive analysis is used to study current and predict possible future offers from the competitors. Main aim of the competitive analysis is to create a unique offer that would differentiate the company from its competitors. Successful need identification and specified tender should increase the probability of winning the first deal with the new client.

After successful tendering process, the supplier will finally receive the pre-commitment from the client. The road to pre-commitment is much longer in business to government context compared to the original effectuation process. This is due to the rules and policies that are regulating the client’s actions. Once the relationship with the new client strengthens and is transformed to long term partnership, the process changes to more effectual direction. At this point the company has more possibilities to influence the upcoming tenders. Goals are being pre-designed together with the client and if these early interactions with the client turn out to be successful, the company can “pre-design” a unique tender, which naturally favors the company over the competitors. The company is continuing interactions with the client to influence the tender specifications. Once the tender is being created, the process shifts again more towards causation, because goals are now pre-defined in the tender specifications and these specifications are difficult to change afterwards.

The company may use the successful client cases as examples in other client meetings to show something that is defined as “proof of concept”. These proof of concept cases are helping the company to secure future deals, because they work as a source of inspiration for
the client and as confirmations of the feasibility of the idea. Proof of concept makes it also easier for the public client to justify their purchase decision and thereby protect against appeals. Therefore, companies that can present these previous client cases have more negotiation power and higher chances to win the tender. Previous client cases and networks that were created while establishing the relationship with the new client can be considered as new set of means.

5. Conclusion

From the theoretical background to our empirical results, we observed how high uncertainty in the business to government context is the main characteristic, which has driven our case company to develop practices that mirror effectuation. Due to the legislative environment and risk averse behavior of the stakeholders, effectuation in business to government sector differs from the original effectuation model by (Sarasvathy, 2001). In this context, effectuation is being practiced within the limits of the rigid bureaucracies and different strategic goals that regulate public and private relations.

Firstly, we observe that our case company uses an effectual approach in a new context in which they did not have previous presence. It appears to be used to establish its first networks with key actors in the market, gather first-hand knowledge about the business environment, and lastly leverage their networks to get as close as possible to the public client. Secondly, once the anchorage to the public market has been set, and a channel with the public client is open, we observed a switch to a causal logic. As defined by theory, causation is a predictive logic in which goals are clearly predefined. The case company applies this same logic to understand public client’s needs in relation to competitors’ offer, so to develop a unique distinct proposal that charms the public client to develop a favorable tender.

Furthermore, once the channel is stable and the client trusts the case company, we observed the intention to shift towards effectual logic to influence furthermore the upcoming tenders´ specifications leveraging public client’s trust. Though theory points that effectuation is used by highly innovative firms, in this context it appears rather a survival practice. We conclude that this combination of effectual and causal logic is a specific strategy that is formed to deal with highly uncertain environment, establish presence in new markets and develop trust with
public clients through a unique offer. We observed an interest in early interaction with the client, so to have more time to influence future tenders to their advantage.

As we identified the case organization’s effectual process, we could point some barriers for innovation. Firstly, the systemic uncertainty in the context is generated by regulations, political influence and accountability of public managers. They nullify the possibility to easily gain pre-commitments from public clients. Also, the high competition and the little number of public clients make developing a market presence expensive and very risky, so the strategy based on effectuation is applied by the case company. Therefore, from the supplier side there is reluctance to invest further resources on highly innovative projects. On the other side, the public client is reluctant to commit so to not be held accountable in case of failure or financial losses. Yet, if innovation is considered in terms of incremental addition of features of existing products, we conclude that innovation in business to government sector is driven by clients’ demands. So, incremental innovations are the norm and are being introduced to the market regularly, while radical innovation is still hindered by lack of pre-commitments, short-term focus and risk avoidance, reducing the possibilities to share the risks between public and private stakeholders and increase the pool of means available. Therefore, private suppliers are mostly focused on their own benefit, using existing technology and know-how to identify existing public needs so that to have an advantage within the tenders’ process.

Therefore, we conclude that the case organization we studied, optimized its risk and uncertainty management techniques combining both effectuation and causation. The first, applied to explore the market, its actors and build a presence, so to find a hook with a public client. Then, causation logic is applied to spot public client’s needs, develop an offer that provides best value compared to the competition and aim to win the public procurement. Our case organization declared focus for the long-term is to build trust with public clients so to have space to propose different product solutions. Yet, instead of using clients’ trust to propose innovative solutions and gain pre-commitments, they keep influencing the clients to develop tenders to favor the purchase of their products. The only innovative activity observed limits to adding demanded features by the clients to existing product lines.

This effectual/causal model awareness could be exploited by the case company to gain pre-commitments, potentially allowing radical innovation to emerge. In fact, the ability to run pilot projects with public organizations, that take the position of an early adopter, would
increase the possibilities to collect early feedback and develop successful products. Also, a more efficient use of public procurement for innovation and reducing the threat of appeals could increase the public organization’s abilities to demand innovation. Shifting the energy from costly appealing process to implementing innovative solutions, will benefit cities and municipalities are facing to the actual innovation work could foster the necessary innovation work that needs to be done in sustainable city sector and public sector in general. Private companies have the know-how and abilities to create the solutions, public authorities should be able to demand private suppliers to provide innovative solutions without excessive concerns of the downsides, rather focus on the long-term socio-economic benefits.

6. Discussion

6.1. Limitations

As observed earlier in the methodology, action research is a research methodology which present several limitations which were briefly discussed then. Small sample size and focus on one case company is often criticized for lack of generality of the developed theories and replicability of the methods. Yet, our conceptual framework sheds a light on Effectuation in a business to government context. According to Eden and Huxham (2006), similar study should be conducted in several other organizations, this should verify our findings and build step by step a general theory. This study should also be repeated in other cultural settings within the same context, so to verify if there are any external factors that we didn’t consider, which would alter the outcomes.

In research oriented action research the exploration of the data should be replicable or at least justifiable to others (Eden & Huxham, 2006). Our aim here was to produce a study that could be replicated in other context to advance the emerging theory. Despite all our effort and careful considerations, there is always a possibility that the presence of the researchers influenced the behavior of the participants and thereby distorted the data. Also, the fact that all the participants in our experiment had academic background might have caused some bias to our experiment. Academic background of the participants might encourage them to try to answer to our questions in a certain way. And considering action research a methodology which implies the full participation of the researcher within the context, we should consider a lack of objectivity. Moreover, the full process of research oriented action research should involve multiple inter connected cycles of involvement in the organization (Eden & Huxham,
Due to the limited time, we had to be physically present in the office, our study included only limited cycles of involvement. We recognize that this circumstance reduced the opportunity to explore and gather further qualitative data that would might influence the results.

According to Eden and Huxham (2006), research oriented action research generally lacks the triangulation, which is the case of this type of study sought between observations, accounts and time. According to the author, the lack of triangulation implies that the focus of research oriented action research should be on building fruitful conceptualizations about “what could be”, instead of verifying “what is”. Furthermore, as several critiques point out, content analysis is a very subjective approach, and the researchers themselves are influencing the outcome of this analysis. We tried to reduce the possible errors through several readings of the transcripts, cross-analysis and recoding, but the possibility of error should always be considered when interpreting our data and findings. Our results should be considered as the first attempt to develop understanding on a relatively understudied field, therefore our framework should be reviewed. Another limiting factor we consider is our limited amount of experience as researchers and interviewers, which in such a pervasive methodology most likely it has been a major handicap for our data collection and analysis. We consulted our supervisor frequently and asked our colleagues to proofread our interview and coding guidelines.

The experiment developed to answer this study, a training session and a case study, could also be limited. We attempted to develop an experience to collect as many qualitative data as possible. Yet, the design underwent many limitations due to schedule clash between us and the Subjects, therefore developing a ‘practical’ experience which could fit in a limited pre-set time frame. The number of subjects involved, the design of the experiment and procedures could constitute potential limitations, despite following scrupulously methodological recommendations from our research book and other peer reviewed articles.

6.2. Considerations for Other Contexts

In the beginning, we were ambitiously aiming to research about Lean Start-up within the business to government context. Yet, from the original research purpose we were forced to reduce the scope, due to time limitations, and focus on effectuation process.
The Lean Start-up methodology was born outside of the academic field, but as Frederiksen and Brem (2016) point out, the logics of effectuation are presented throughout The Lean Start-up. The authors note that the argumentation used by Ries strongly reflects the argumentation used by Sarasvathy (2001). Whereas Ries (2011) speaks about the reduction of “effect waste”, which refers to unnecessary practices that don’t bring any added value to the customer Sarasvathy (2001) stresses the importance of focusing on activities that are “effective” and thus generate added value to the customers. Effectual logic allows the entrepreneurs to create new opportunities with new means (Sarasvathy, 2001) and as stated above, effectual logic is a constructive and creative approach. Both approaches, The Lean Start-up and Effectuation highly encourage experimental learning and continuous learning and adaptation over planning processes that are based on causal logic (Frederiksen & Brem, 2016). However, the purpose behind experimental learning and continuous adaptation of the strategy means creating order, not chaos (Ries, 2011; Sarasvathy & Venkataraman, 2011).

Ever increasing uncertainty and fast cycles of the economy have driven managers and organizations from different sectors to seek for approaches that are better suited for the new highly uncertain environment (McKelvie, Haynie, & Gustavsson, 2011; Wiltbank et al., 2006). The Lean Start-up and Effectuation were born separate from each other, but the roots of both approaches are in the long-term observation and recording of the practices used by expert entrepreneurs. Interestingly, both Ries and the academics ended up to similar conclusions after studying expert entrepreneurs. Ries (2011) argues that constant innovation and fast learning helps the start-ups and any type of organizations to focus their efforts on the activities that will create actual value to the customer. Thus, they can reduce the “effect waste” and exploit untapped opportunities faster. Therefore, the Lean Start-up approach will enable the organizations to be or become “effective”, whereas more causational type of approaches and focus on long term strategies have promoted “efficiency” over effectiveness.

According Ries (2011), the founding father of Lean Start-up, entrepreneurship can be understood as “management under the conditions of high uncertainty”. Lean Start-up is a practice that has roots in Lean Manufacturing and the main principle behind Lean Start-up is the constant validation of the idea, interaction with the client from the very beginning and “pivoting”, which refers to changing the path from the original idea when additional information emerges. Lean Start-up is widely used among tech-entrepreneurs, but according the founding father Eric Ries, Lean Start-up is a practice that is applicable to corporation,
non-profit and governmental contexts as well. We believe that the theoretical constructs that we built here could be useful for future studies about possible applications for Lean Start-up in business to government context.

In addition to the considerations for Lean Start-up studies, we would like to open a discussion about barriers for innovation in business to government sector that were identified during our study. As we noticed here earlier, for companies in business to government sector the difficulties gain pre-commitments and run experiments with early adopters sets some limits for the application of effectual approaches. It might also be difficult to create prototypes about such massive products as ships or buildings. But only creativity is the limit here. The prevailing problem that is limiting the possibilities to innovate in business to government sector is the tendency to penalize anyone who tries to do something different. When it comes to producing new innovation and trying to create new technology, failure is common (Cannon & Edmondson, 2005; Politis & Gabrielsson, 2009) and experimenting and trying and failing is more of a rule than an exception (Boland, Riggio, & Phelan, 2013). Environment that leaves room for trial and error is a necessity for innovation and to clear the way for innovation, public organizations and policy makers should increase the protection for progressive public organizations, which would be interest to experiment new innovative solutions.

We hope that our study will inspire further action-oriented researches that are focused on Lean Start-up. Plenty of companies are already applying Lean Start-up as a strategic approach or product development approach. Action research could link this practice that was developed by an expert entrepreneur whose aim was to capture the practices of other expert entrepreneurs to a simple, straightforward and learnable model, to the scientific world. Further connections between research and practice through the link between effectuation and Lean Start-up could increase the opportunities to study both phenomenon and evoke fruitful discussion about modern management. This theoretical reflection will demonstrate the possible links between academic field and Lean Start-up, which here represents the practical school of entrepreneurship.

Limited number of clients in business to government sector results a situation where the suppliers are forced to expand their business to global markets. Even the entire European market might be too small to sustain the business and therefore the companies are running business activities across the globe. Sustaining international business activities and
relationships in faraway destinations requires a lot of time and resources. Bureaucratic purchase processes and complicated procure processes are also eating up the time of the sales personnel. Overall, even sustaining the day to day business activities binds so much resources that there is not much left for developing future products. Effectuation is proven to be an effective tool also when exploring new untapped or unknown global market opportunities (Chetty, Ojala, & Leppäaho, 2015; Kalinic, Sarasvathy, & Forza, 2014; S. Sarasvathy, Kumar, York, & Bhagavatula, 2014). International aspect of the business could also partially explain why the sales managers also in our case organization have already learned to apply the logics of effectuation.

Public organizations are struggling to provide high quality services to the citizens of ever growing urban areas. Urbanization has created significant problems, but concentration of the inhabitant could also open possibilities to create efficient resource management, such as circular economy, smart energy grits and sharing economy. Private organizations have plenty of capacity and know-how to produce innovative solutions for tomorrow. Well-functioning, and goal oriented private and public partnerships could work towards these goals. Private organizations have the abilities to create solutions for us, but now our task would be to create an environment that could effectively foster innovation in business to government sector. If the risks are entirely carried by the private corporations and there are no incentives to innovate, we will most likely see little progress in business to government sector in near future. Regular markets are able to foster innovation efficiently, because frontrunner position provides some clear competitive advantages (Frederiksen & Brem, 2016; S. D. Sarasvathy et al., 2008; Saras D. Sarasvathy & Venkataraman, 2011) and markets are distributing the risks efficiently between many stakeholders. Similar incentives should be provided to companies working at business to government sector.

Innovation friendly environment that enables and encourages experimenting requires input from early adopters. Companies at business to government sector need active early adopters that can provide fast and straightforward feedback at the early point of development. Strategic partnerships and possibilities to gain pre-commitments would enable more efficient use of experimental and creative strategies such as The Lean Start-up and Effectuation. Key to change in business to government sector are the clients, which are represented by public organizations. Still, what the companies within business to government sector can do to create more favorable conditions to themselves is to shift the focus from competitive analysis.
towards strategic partnerships and from predictive logics to partnerships with progressive public organizations that are functioning in enabling environments.

6.3. Implications

6.3.1 Implications for Researchers

Effectuation has been studied in several types of organizations and contexts, but business to government sector has been so far, a widely-neglected field. Still, companies and public organizations in business to government sector are dealing with pressing problems when it comes to solve crisis related to urbanization and supporting better life quality. As observed in the frame of reference, in the last years’ demand side innovation policies gained new momentum and interest from policy makers (Edquist et al., 2015; Lember et al., 2011; Sørensen & Torfing, 2011). According to Lember et al. (2011), demand side innovation policies trigger a virtuous cycle which brings socio-economic benefits on a larger scale from that single transaction. Technical spill over effects on other private industries, increased attractiveness of the urban area, increased efficiencies of public services are some of the studied positive effects (Lember et al., 2011). Yet, as Kaplan and Haenlein (2009) observe, over the decades there has been a limited academic interest and production of new researches. Therefore, we suggest, given the large scale and long term beneficial effects of innovation within the public sector, future researches should focus on improving the effectiveness of business to government innovation policies.

Also, as we observed in our research, it does not only depend by the lack of risk-taking attitudes in the public side that hinders a proper innovation demand. A lack of willingness and awareness of tools on the private supplier side which could trigger a safer proposal of innovative solutions, could be the aim of other future researches. They could try to identify more practices which influence innovation perception and achievement.

Also, our action research was focused in a specific industry related to public safety, which the participants described as “old” and “mature”. It is possible that further studies could focus on similar contexts, to increase awareness on which contextual elements influence private suppliers’ actions. Future studies could attempt to replicate our experiment, to improve our findings or confute our conclusions. In addition, Eden and Huxham (2006) argue that the generalization of action researches’ conclusions is a step by step process, so future researches should improve and refine our current findings.
Researches should also focus on less developed markets: as an example, European legislative environment and public infrastructures are relatively well developed compared to any emerging market country. Even though our case organization is running global business activities in several countries and regions, it is advisable to repeat this study focusing on other less developed markets to observe if there are changes in private companies’ attitudes and behaviours. Also, it is recommendable to focus on the impact of local culture and values and how they could influence other public industries factors.

As earlier mentioned, time constraints set significant limitations to our first attempt to study the implementation of ‘The Lean Start-up’ within the public context. Future studies could try to accomplish our first idea, so to give the opportunity also to the public sector to benefit from this method. We found studies, such as Boland et al., 2013 and Frederiksen and Brem (2016), which theoretically link the effectual process, developed by Sarasvathy (2001), and ‘The Lean Start-up’, developed by expert entrepreneur Ries (2011). Therefore, we believe we have found sufficient elements to research in this direction. We observed that the use of effectual logics in our study context is used to survive systemic uncertainty, yet it would be of general interest to switch the aim of this practice to innovation, introducing ‘The Lean Start-up’ in the business to government context.

More in general, it would be of general interest also to validate the link between effectuation and Lean-Start-up, as this of course requires more extensive studies would impact the effectiveness of other flexible and iterative modern managerial tools, which a better understanding would allow a greater diffusion and more widespread benefit.

One last consideration goes to our methodology: Eden and Huxham (2006) argue that despite research oriented action research is too context related and unique to be easily repeatable, it develops a more practical theory because of its conclusions grounded in action results within the company. Thus, action research could be used also outside the business to government context to empirically validate the effectiveness of Lean Start-up practices, since it represents a modern way to create and manage innovative organizations.
6.3.2 Implications for Policy Makers

Policy makers have focused on protecting the principles of fairness, transparency, public accountability, democracy, equality and efficiency and we can observe they have reacted to the demand of more quality spending tax payers’ money, as well as of more transparency and accountability. However, as we could observe from our case organization and theoretical background, the downsides of the policies used affects the possibilities to develop and apply innovative solutions in business to government sector. Yet, again, we have observed as well how studies, such as Lember et al. (2011) or Mulgan and Albury (2003), argue that the importance of positive externalities generated by a proper address to innovation. Therefore, an important implication to policy makers should be to continue the work to better balance out policy making, with the aim to create a safer environment for private suppliers to propose variety of solutions.

As observed in theory, political interests influence public institutions’ actions, tangentially avoiding high-risk topics due to the political accountability they have towards the voters. Yet, long-term socio-economic benefits should encourage the development of innovation supporting policies, which would give incentives to public organizations to become part of the innovative process alongside the private suppliers.

One major barrier to address was presented by our case organization, which argued against the reliability of the results of public procurements for innovation. Policy makers should work on developing transparent processes which, once the winner of the tender is established, competitors would not appeal their decisions. Also, processes should prize focused on the innovativeness of solutions proposed rather than price, given the fear of a price-war of our case organization.

Overall, we observed how the current set of values of the public sector contradicts the need of finances, time and opportunities of failure required by a successful exploration of innovative alternative solutions. The case organization, regarding the effectiveness of public procurement for innovation, believed it would turn eventually in a price war of not so innovative solutions. Therefore, there is a demand of increased reliability of these public tools which demands from private suppliers their contribution improve current services or deliver an alternative to it.
Policy makers, therefore, should attempt to embrace a more risk-taking behavior for the long-term benefit of their cities/regions/countries. Truly innovative solutions are results of iterative trial and error processes, therefore to embrace the opportunity to experiment has shown great benefits to public organizations and business to government sector. A more efficient distribution of risk between public and private stakeholders and policies that would protect public organizations to act as early adopters against appeals, should be considered. Increased opportunity to run test pilot would stimulate the proposal of projects coming from the private suppliers, supporting cooperation and development of networks which would make specific geographical area more attractive, increasing its reputation for entrepreneurial-friendly business environment and becoming more interesting to foreign investments.

6.3.3 Implications for Managers

As the nature of research oriented action research involves the interaction with an organization interested in a research topic and the researchers’ impact to it, we developed some implication to our host company. Yet, as our research ethic abides us to present these specific findings, we are limited to present some implications which we believe could be generalizable also to other context and firms. This, of course does not mean that we believe our findings are general, rather these are reasonable assumptions based on our findings which should be theoretically tested prior official generalization, so to have a theoretical validity.

Theoretically we observed how organizations that are able to achieve control through effectual logics set the standards within an industry (Sarasvathy et al., 2008; Werhahn et al., 2015). We also observed how our case company used effectual logic in the attempt to control its resources and develop meaningful partnership which would increase its possibilities to reach the public client. What managers could attempt to do is to influence its networks to bring innovation as focus of their activity.

The awareness on how effectuation has been used until now, and its links to business to government context features, gives the opportunity to purposely change some actions to obtain different results. In the case of our organization which asked how to improve its innovativeness, we believe that the answer to their question lies in the level of awareness with which they apply their effectual/causal approach. This means that instead of influencing the public client to develop a tender to favor their product line, perhaps developing an
incremental innovation, they could focus in gaining pre-commitments to greater innovations and radical projects.

This implies a shift of meaning and purpose to the policies and decisions they take. Using their influence over their networks and public clients is a risk-taking action which implies contingent precautions, such as action plans with distinct phases, as suggested by the affordable loss principle of Sarasvathy (2001). To scout these opportunities and reach the position of frontrunner which private suppliers should actively seek partnerships are willing to support them to develop not-existing future products and innovations and to test the innovative solutions in the market early on. Of course, all of this would be useless if the public client would not purchase the innovation. Therefore, we suggest that the greatest of the effort would be in influencing the public actor in sharing risk in the development of an innovative solution. These partnerships could be formed with progressive public organizations which have the abilities and competences to follow through the process.

Instead of putting too much focus on effectual logics such as competitive analysis and customer needs, the companies in business to government sector should try to form strategic alliances and partnerships to spread the risks and become forefront runners developing future technologies. The active search of partnerships should be introduced in the daily mansion for any employee with access to the market.

Innovation should be defined as a responsibility of every employee within the organization. People working close to clients could bring valuable information and input back to the organization (Werhahn et al., 2015). Therefore an implication to firms could be to integrate networking development with effective prototyping techniques, which would allow the R&D department to experiment with minimal resources and help business to government suppliers to learn more about possible new avenues. Early interaction with the client, experimenting at the early stage and immediate feedback from the market could enable the companies in business to government sector to enter new markets with new products. So, strategic alliances with progressive public organizations that are willing to take risk on using innovative solutions at early stage of development could open the locks and create possibilities to produce truly innovative solutions.
7. Reference List


Appendix A. Research Instrument

Tools
We used tape recorder and camera to document the experiment situation. Participants were given an opportunity to jot down notes on an empty paper. Both participants were also given a market research report about UK market, which they could chose to use, but the use of the report was optional.

Introduction
Your task here is to solve a series of decision problems relative to the UK market. You can deliver to the market any product that currently your firm sells, or innovate it, or build a new one if it supports your process. Always explain, justify, speak out loud your mind, so to make clear the reasoning behind your decision-making process and the involvement of any tools that you believe it would help you to solve the problems.

Take as much time as you prefer to solve the problems and please think out loud throughout the task. Start by reading out loud the following starting point about the product and continue by reading each of the questions out loud and thinking out loud while solving each of the problems.

Starting Point

Your company has recently faced some troubles in the UK market. Your local agent who was in charge of the enforcement technology solutions is under criminal investigation due to a corruption scandal. At the beginning of this exercise;

1) You have lost all your connections to the British clients and authorities.
2) You have the following report about law enforcement technology solutions in the UK market (See attachment).
3) Come up with solid argumentation and keep in mind that you are developing an action plan for your firm, therefore consider you have to be convincing.
4) You have only your firms’ current resources at hand (people, network, hardware, finances …)
Decision Problem
Please answer the following questions one at a time: (Please continue thinking aloud as you arrive at your decisions) we will talk more about the possible growth paths for this product/set of technologies. This task is designed to stimulate your creativity. When answering to questions, try to challenge yourself and come up with less obvious ideas and solutions. Remember: keep thinking out loud while answering to the following questions.

1) How would you identify potential local customers for this product?
2) Who could be your potential competitors for this product?
3) What information would you seek about potential customers and competitors — list questions you would want answered.
4) How will you find out this information — what kind of market research would you do?
5) What do you think are the growth possibilities for this product in UK market?
6) How would you introduce the product to the market?
7) How does your action plan include and considers risk?

Additional questions
These questions were written on a white board after the participant had solved the previous problems.

8) Leveraging contingencies
9) Looking back to the extraordinary scenario, (pt.8), how would you answer to all the previous questions?

Appendix B. Interview Questions
1. How does company X get its projects/commission?
2. (If public tenders come out) are these public tenders fixed in requirements?
3. How are these tenders / public procurements researched?
4. How has company X “innovated” so far its product range?
5. Is there opportunity to discuss with the client? Is there opportunity to try out new solutions not necessarily previewed?
6. Is knowledge shared between within and between departments in company X?
7. Are you aware of public procurement for innovation?
8. What strategies to foster innovation are you considering in company X?

Appendix C. Judge Feedback Section
Problem-Solving Spaces

Results/Subject 1

<table>
<thead>
<tr>
<th>Creativity</th>
<th>Newness of the idea and approach (in comparison to already existing practices, tools and products)</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market knowledge</td>
<td>User and customer involvement</td>
<td>4 (existing knowledge)</td>
</tr>
<tr>
<td></td>
<td>No building new knowledge</td>
<td></td>
</tr>
<tr>
<td>Risk management</td>
<td>How effectively are the potential losses managed?</td>
<td>3</td>
</tr>
<tr>
<td>Resourcefulness</td>
<td>• Combining resources in an unexpected way</td>
<td>3</td>
</tr>
<tr>
<td>Decision making</td>
<td>Ability to increase the pool of resources (e.g. networking)</td>
<td>5</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Argumentation behind the decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much are decisions backed up by clear and justified reasoning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practicality</th>
<th>Feasibility of the idea(s) and the plan</th>
<th>4</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dealing with uncertainties</th>
<th>In which problem space (see picture below) could this plan work?</th>
<th>First 3 spaces</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>4</td>
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</table>

**Results/Subject 2**

<table>
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<tr>
<th>Creativity</th>
<th>Newness of the idea and approach (in comparison to already existing practices, tools and products)</th>
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</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Market knowledge</th>
<th>User and customer involvement</th>
<th>2 (existing)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4 (building new)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk management</th>
<th>How effectively are the potential losses managed?</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resourcefulness</strong></td>
<td>• Combining resources in an unexpected way</td>
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<td></td>
<td>• Ability to increase the pool of resources (e.g. networking)</td>
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<tr>
<td><strong>Decision making</strong></td>
<td>• Argumentation behind the decisions</td>
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<tr>
<td></td>
<td>• How much are decisions backed up by clear and justified reasoning</td>
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<tr>
<td><strong>Practicality</strong></td>
<td>Feasibility of the idea(s) and the plan</td>
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<tr>
<td><strong>Dealing with uncertainties</strong></td>
<td>• In which problem space (see picture above) could this plan work?</td>
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<tr>
<td></td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Subject 2 performed better from risk management perspective performed better.</td>
<td></td>
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</tbody>
</table>

### Appendix D. Training Material

For the training purposes we prepared a workshop that included both active participation and listening. First, we introduced the main concepts of effectuation through practical examples and learning video. Then we asked the subject 2 to solve a creative problem. First the subject 2 was asked to present his solution and then possible alternative solutions were discussed together.

Creative Problem 1
The major of the city has asked your company to build a bridge over the river that is splitting the city in half. What would you do?

After the possible solutions were discussed, we asked the subject 2 to think about situations in daily work where he could apply the principles of effectuation to solve challenges. After the practical reflection, we presented the subject 2 a road safety report from Middle East and asked him to think about possible entry strategies and identify business opportunities. First the subject 2 presented his ideas and then we pointed out alternative ways of seeing the same situation. We also discussed about the best ways to manage risks.

After the training was completed, we asked the subject 2 to conduct a homework that was inspired by Sarasvathy's (2001) “Curry in a Hurry” setting. We simply asked the subject 2 to prepare a tasty dinner for his family by using only the ingredients that he already had available at home. The purpose of this simple but creative exercise was to visualize how effectual logic could be applied in simple problem solving tasks.