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REFINING THE FRAMING PERSPECTIVE
The early diffusion of network contract

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INTRODUCTION

Doing research is, in essence, a process of investigating (relevant) problems in order to find answers capable to extend our knowledge. In doing so, researchers raise some questions to justify *why* so much effort is put on this intellectual challenging (and sometimes frustrating) activity. In this introduction we'll try to answer to these questions.

What's the theoretical debate this research desires to contribute to?

In our research, we have chosen to join the new institutional debate on how the motivations of adoption change during the diffusion of an organizational practice or idea. For a long time, this debate has been dominated by the so-called 'two-stages' model of diffusion developed by Tolbert and Zucker (1983). According to this model, diffusion can be split into two phases: early and late adoption. Early adopters seek the potential technical or economic benefits coming from the adoption of an innovation, while later ones are more interested in the legitimacy they could gain by conforming to an institutionalized practice. This model has been widely applied in new institutional research (Baron et al., 1986; Fligstein, 1985; Fligstein, 1987; Haveman, 1993; Tolbert and Zucker, 1983; Westphal et al., 1997; Zajac and Westphal, 2004), even though empirical evidence did not always support it (Burns and Wholey, 1993; Goodstein, 1994; Kraatz and Zajac, 1996; Sherer and Lee, 2002). On this basis, several scholars are increasingly challenging the idea that efficiency and social motivations of adoption are related to a well-defined phase of diffusion (David and Strang, 2006; Denrell and Kovacs, 2008; Jonsson et al., 2009; Kennedy and Fiss, 2006; Kennedy and Fiss, 2009).

One of the most exciting contributions trying to refine diffusion arguments is entitled "*Institutionalization, framing and diffusion: the logic of TQM adoption and implementation decisions among US hospitals*" (Kennedy and Fiss, 2009). This study is highly innovative for several reasons. First, it is the seminal contribution introducing the 'framing perspective' in the study of diffusion. This theoretical perspective suggests that organizational decision makers tend to frame adoption as either a threat or an opportunity (Dutton and Jackson, 1987; George et al., 2006; Staw et al., 1981). In particular, early adopters see the opportunity to simultaneously obtain economic and social gains (e.g. performance or reputational improvements), while later ones are motivated by the desire to avoid economic and social losses (e.g. fulfill the competitive gap created by the innovation or answer to social expectations). In this sense, logics of efficiency and social expectation are simultaneously used during the whole diffusion process rather than being predominant in a given phase, as the two-stages model suggests. Second, the motivations of

adoption are directly asked to decision makers, while contributions applying the two-stages model simply inferred them from other measures. For instance, Tolbert and Zuckert (1983) used the characteristic of adopters (such as municipality status, age and size) to explain variations in the motivations for adoption. Similarly, Westphal and colleagues (1997) assumed that the gradual decrease in TQM customization was signaling a reduction in the search of efficiency paralleled by an increase in the search for legitimacy.

Kennedy and Fiss (2009) study the change in adoption motivations of TQM practices among US surgical hospitals in early nineties. Their findings support the idea that social and economic motivations combine rather than mutually exclude in adoption-decisions. However, the chosen predictors (economic gains, social gains, economic losses and social losses) lead to a disappointingly low value of model fit. This fact makes Kennedy and Fiss (2009) to wonder what is missing from the analysis and to raise a call for more applications of the framing perspective in diffusion studies.

What's new in this research?

As far as we know, the call raised by Kennedy and Fiss (2009) to expand and verify their ideas has not been answered yet. In trying to do so, we suggest to refine the framing perspective in several ways.

First, we suggest to integrate the framing perspective with the 'diffusion of innovation theory' (Rogers, 1962; Rogers, 2003). In their model, Kennedy and Fiss (2009) have included the social and economic benefits (losses) that potential adopters expect to obtain (avoid). Using the terms developed by Rogers (2003), these perceived attributes constitute the 'relative advantage' of the innovation. However, several other relevant perceptions influence adoption decisions. A potential adopter will always take into account the perceived compatibility of the innovation with his past experiences and values (compatibility), the perceived difficulties in using it (complexity), the possibility to easily reverse the adoption decision (trialability) and the possibility to observe the results obtained by previous adopters (result observability). On this basis, we retain the idea that early and late adopters respectively frame adoption decision as an opportunity or a threat, but we also take into account the influence of perceived complexity, compatibility, trialability and result observability in explaining adoption decisions.

Second, we suggest to include perceived institutionalization in the analysis. Following a great number of studies that use diffusion as a proxy for institutionalization (Fligstein, 1985; Tolbert and Zucker, 1983; Westphal and Zajac, 1997), Kennedy and Fiss (2009) assume that widespread diffusion of TQM practices equals to its institutionalization without directly measuring it. However,

'institutionalization' refers to how things become permanent in the society, while 'diffusion' refers to how things spread in a community of potential adopters (Colyvas and Johnson, 2011). We expect that adoption decisions are facilitated when a practice is perceived as a stable, resilient and enduring way of organizing activities (i.e. institutionalized).

Third, we suggest to apply Configurational Comparative Methods (CCMs) to study how the perceived attributes of a diffusing innovation combine to explain its adoption. To our knowledge, diffusion has always been studied using statistical techniques based on linear algebra that poorly take into account the causal complexity underlying adoption decisions. By contrast, CCMs are well suited to identify the co-presence of meaningful causal paths (i.e. combinations of perceived attributes) leading to a given outcome of interest (i.e. adoption decision) (Berg-Schlosser et al., 2008; Schneider and Grofman, 2006; Wagemann and Schneider, 2010a). Due to these potentialities, CCMs are increasingly used in organizational and strategic research fields (Bromley et al., 2012b; Camuffo and Gerli, 2013; Fiss, 2007; Fiss, 2011; Fiss et al., 2013b; Grandori and Furnari, 2008; Grandori and Furnari, 2013; Greckhamer et al., 2008; Kogut and Ragin, 2006; Lacey and Fiss, 2009). To us, the adoption motivation debate can benefit from the idea that alternative combinations of perceived attributes can explain adoption decision within the same group of adopters.

Finally, we suggest to distinguish between 'familiar innovations' (i.e. innovations that are perceived as 'new' in the community of potential adopters, while they are already known in other sectors of the society) and 'non-familiar innovations' (i.e. innovations new for the community of potential adopters and the society as a whole). The diffusion of TQM tools in early nineties is clearly an example of a familiar innovation as these practices were 'new' for public sector hospitals, but they were considered an already well-established and legitimated practice to improve quality in the private sector. By contrast, a non familiar innovation needs to be perceived as valuable by both adopters and non-adopters in order to generate social gains (Fiss and Zajac, 2006; Hargadon and Douglas, 2001; Strang and Meyer, 1993). However, the diffusion of a non familiar innovation could be championed by powerful social actors (i.e. change agents) generating rational-instrumental legitimacy capable to support diffusion (Abrahamson, 1991; Davis and Greve, 1997; Greenwood et al., 2002; Strang and Meyer, 1993; Vasi, 2006). Kennedy and Fiss (2009) present some theoretical insights on how early and late adopters frame adoption decisions for familiar innovations. As far as we know, the framing perspective has never been applied to the study of non-familiar innovations.

In our research, we consider network contract (*contratto di rete*) as a non familiar innovation diffusing among SMEs. Introduced in 2010, it is the first contractual strategic alliance specifically designed for Italian SMEs following the Small Business Act (SBA) principles. Despite the continuous increase in the firms involved (764 contracts signed in April 2013 and 4000 firms

involved), it is still a not-well established way to cooperate. In particular, we'll study the diffusion of network contract among industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto. This geographical area provides a relatively homogeneous economic and social context suitable to perform an exploratory research on the early diffusion of network contract.

How is this research structured?

This research is structured in the following parts:

1. *Theoretical background*, in which we discuss the state-of-the-art of the theoretical debate on diffusion, the intended contribution of our research and the object of analysis. In particular:
 - we review the two debates in new institutional research in which diffusion arguments are involved, namely the debate on rational vs social diffusion and the debate on adoption motivations (chapter 1);
 - we discuss how diffusion, isomorphism, legitimacy and institutionalization relate to each others (chapter 1);
 - we critically review the framing perspective developed by Kennedy and Fiss (2009) and we contend that Rogers' diffusion of innovation theory can help in extending our knowledge on how perceptions influence adoption decisions (chapter 2);
 - we define the aim of our research and we propose how to refine the framing perspective (chapter 3);
 - we identify the object of our research, the network contract. In particular, we relate this new contract to the European strategy to develop a more supportive environment for SMEs (i.e. Small Business Act and Horizon 2020) and we compare it with other cooperative agreements present in Italian legislation (chapter 4).
2. *Methodology*, in which we discuss how to measure the perceived attributes of a network contract and how these attributes can be combined using Boolean algebra to explain adoption decisions. In doing so:
 - we discuss why network contracts can be considered a non familiar innovation diffusing among Italian SMEs (chapter 5);
 - we define a set of items suitable to measure the perceived attributes of a network contract (chapter 5);
 - we review the logical foundations and the main techniques (csQCA, mvQCA and fsQCA) used in Configurational Comparative Methods (CCMs) (chapter 6);
 - we discuss how CCMs can be used to shed new light on the causal complexity in adoption decisions (chapter 6).

3. *Discussion*, in which we apply fsQCA to study the diffusion of network contract among industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto (chapter 7).

What are the main findings of this research?

Our findings support the basic intuition of the framing perspective as perceived economic and social benefits do not mutually exclude in early phases of diffusion. However, the use of fsQCA provides some new theoretical insights to the debate on adoption motivations. First, we have shown that several equifinal configurations can explain early adoption. These alternative causal paths allow to present a more fine-grained picture on the causal complexity characterizing the adoption of an innovation. Second, economic and social benefits are only part of the story in explaining adoption decisions. Due to the fact that they are INUS conditions in all configurations, they need to be combined with other relevant attributes: perceived compatibility, complexity, observability, trialability, observability of results and institutionalization. Third, these perceived attributes can be more or less causally relevant in explaining adoption decisions, i.e. they become peripheral and core causal conditions in different configurations. These findings can be helpful to further extend the framing perspective.

To our knowledge, this is also the first time that the motivations of adoption of network contract are investigated. Our results suggest that early adopters considered network contract as a not-yet institutionalized form of cooperation in industrial sector in Friuli Venezia Giulia and in the eastern part of Veneto. Moreover, adopters find difficult to acquire knowledge on the results obtained by previous adopters. This is a crucial point as local change agents championing the adoption of the contract need to further increase their efforts to spread useful knowledge on this innovation. This effort will increase the likelihood that the diffusion of network contract will become a self-sustaining process.

RESEARCH STRUCTURE

<u>PART I - THEORETICAL BACKGROUND</u>	
Ch. 1 - Debating diffusion in new institutional research	<ul style="list-style-type: none"> - Review diffusion in new institutional research - Discuss relations between diffusion, isomorphism, legitimacy and institutionalization
Ch. 2 - Motivations and perceptions in innovation adoption decisions: a framing perspective	<ul style="list-style-type: none"> - Critically review the framing perspective in adoption decisions - Extend the framing perspective using diffusion of innovation theory - Extend the framing differentiating between familiar and non-familiar innovations
Ch. 3 - Research question and research design	<ul style="list-style-type: none"> - Synthesize our intended contribution to the adoption motivation debate
Ch. 4 - Small Business Act and network contract	<ul style="list-style-type: none"> - Review the evolution of network contract legislation - Relate network contract to the Small Business Act - Identify advantages/disadvantages of stipulating a network contract
<u>PART II - METHODOLOGY</u>	
Ch. 5 - Developing an instrument to measure the perceived attributes of network contracts	<ul style="list-style-type: none"> - Explain why network contract can be considered a diffusing innovation - Discuss how to measure the perceived attributes of an innovation - Develop a set of items measuring the perceived attributes of a network contract
Ch. 6 - Configurational Comparative Methods as a new way to shed light on causal complexity	<ul style="list-style-type: none"> - Shed light on the acronyms and definitions used in CCMs - Discuss the logical foundations of CCMs - Review the techniques used in CCMs (csQCA, mvQCA and fsQCA) - Discuss how CCMs can contribute to the adoption motivation debate
<u>PART III - DISCUSSION</u>	
Ch. 7 - The early diffusion of network contract	<ul style="list-style-type: none"> - Apply fsQCA to the early diffusion of network contract - Discuss the alternative configurations explaining early and not-early adoption - Verify the robustness of results

PART I

THEORETICAL BACKGROUND

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<u>PART III - DISCUSSION</u>	
Ch. 7 - The early diffusion of network contract	
	<ul style="list-style-type: none"> - Apply fsQCA to the early diffusion of network contract - Discuss the alternative configurations explaining early and not-early adoption - Verify the robustness of results

Chapter 1

DEBATING DIFFUSION IN NEW INSTITUTIONAL RESEARCH

In this chapter we review the ongoing debate in new institutional research involving diffusion arguments. We also clarify the theoretical and empirical differences existing among diffusion and other central concepts in new institutional research. In doing so, we briefly review diffusion of innovation theory, a theoretical framework used to study the process of contagion, reinforcement and feedback through which an innovation is accepted in a social system (section 1.2). Then, we discuss the two main debates in new institutional research in which diffusion arguments are involved: the debate on rational vs social diffusion and the debate on technical vs legitimacy motivations of adoption (section 1.3). Then, we provide analyze the relations existing between diffusion and isomorphism (section 1.4), legitimacy (section 1.5) and institutionalization (section 1.6). The main findings are that scholars have displayed a disappointing tendency to conflate diffusion with isomorphism and institutionalization. We hope to contribute to shed light on these relations.

1.1 Introduction

New institutionalism in organization theory is only one of the many "new institutionalism" that emerged in social science as a reaction to the hegemony of behavioral perspectives (Dimaggio and Powell, 1991; Hall and Taylor, 1996). While these perspectives essentially explained society as a simple aggregation of individual choices, in late seventies scholars challenged this idea claiming that social actors are driven by contextual factors, societal scripts and institutional factors (Schneiberg and Clemens, 2006). This new way to look at society also posed into question the paradigmatic idea that organizational structures and practices were simply rational responses to environmental contingencies and to competitive pressures (Scott, 2004). In 1977 Meyer and Rowan suggested that organizations could incorporate practices in their formal structure to conform to powerful institutional rules in order to be perceived as proper, rational and necessary actors in modern society (Meyer and Rowan, 1977). In the same year Zucker showed that high levels of perceived institutionalization uniform and make more resilient to change the transmission of cultural understandings among individuals (Zucker, 1977). Meyer, Rowan and Zucker sow the seeds for a new theoretical approach focused "on a broad but fine slice of sociology's institutional cornucopia: organizational structures and process that are industry-wide, national or international scope" (Dimaggio and Powell, 1991) that was officially labeled as 'new institutional theory' in the UCLA conference in 1985.

More than 30 years later, new institutionalism is considered as one of the dominant research programs in organization studies (Gmur, 2003; Knudsen, 2003; Mizruchi and Fein, 1999; Tsoukas and Knudsen, 2003). Generations of scholars have been seduced by the possibility to understand how organizational structures and behaviors are shaped by powerful institutional pressures, how

certain practices diffuse or how organizations seek to obtain and administrate their legitimacy. In their critical review in the introduction of *The SAGE Handbook of New Institutionalism*, Greenwood and colleagues meticulously describe the efforts in consolidating the initial formulations of the theory during the eighties, in systematizing the ideas and applications in the nineties and in further expanding new institutional research in more recent years (Greenwood et al., 2008). While in late eighties new institutionalism was still considered in its adolescence (Scott, 1987), the substantial improvement in the concepts constituting the corner-stones of the theory has recently lead to the assert that institutional theory is finally approaching adulthood (Jennings and Greenwood, 2003; Scott, 2008a).

Can we simply say 'so far, so good' for new institutionalism in organization theory? Several scholars do not agree with this optimistic view. Palmer and colleagues provocatively argue that new institutionalism has a risk to resemble to a loosely organized framework if researchers continue to simply re-label concepts developed in other theories rather than creating new ones (Palmer et al., 2008). Similarly, Czarniawska (2008) contends that new institutionalism is a vocabulary, a way of thinking to social reality rather than a 'traditional' theory with strictly formulated concepts and relations among them. In this sense, it is fully understandable why 'institution', 'institutionalization', 'legitimacy' and 'legitimation' are subjected to diverse interpretations in a sort of anarchic pluralism (Czarniawska, 2008). Greenwood and colleagues admit that, since the eighties, the attractiveness of new institutional ideas and the absence of clear definitions have led to several misleading interpretations of institutional arguments (Greenwood et al., 2008). Several scholars highlight that new institutional arguments are sometimes applied without fully understanding their sociological roots (Hinings and Tolbert, 2008; Hirsch, 2008; Meyer, 2008; Scott, 2008a). These misinterpretations are increasingly attracting the efforts of new institutional scholars to provide more fine-grained analysis of these concepts constituting the theoretical cornerstones of the theory (Beckert, 2010; Boxenbaum and Jonsson, 2008; Colyvas and Johnson, 2011; Czarniawska, 2008; Deephouse and Suchman, 2008; Droege et al., 2011; Heugenes and Lander, 2009; Kennedy, 2012; Rossman, 2009; Vergne, 2011). In this chapter we want to contribute to these efforts by analyzing one of the key concepts in new institutional theory: the concept of diffusion. Similarly to flowers using their fragrance to attract bees in search for nectar, diffusing organizational practices, structures and behaviors naturally attract organizational scholars in search for institutional effects. This long tradition in studying diffusion has lead to the development of several paradigmatic assumptions. First, coercive, mimetic and normative pressures play a key role in the spreading of organizational practices (Fligstein, 1985; Haveman, 1993; Kraatz and Zajac, 1996; Palmer et al., 1993; Tolbert and Zucker, 1983). Second, diffusion is normally used as a proxy of the

institutionalization of managerial practices (Fligstein, 1985; Schneiberg and Clemens, 2006; Scott, 2001; Tolbert and Zucker, 1983; Westphal and Zajac, 1997). Third, motivations of adoption of a diffusing practice are claimed to adhere to the two-stages model of diffusion and to mutually exclude in different phases of diffusion (Fligstein, 1985; Fligstein, 1987; Fligstein, 1991; Haveman, 1993; Tolbert and Zucker, 1983; Westphal et al., 1997; Westphal and Zajac, 1994b; Westphal and Zajac, 1997). Only recently the validity of these paradigmatic assumptions is posed into question. For instance, technical and legitimacy reasons seem not to be related to a well-defined phase of diffusion as the two-stages model suggests. Practices could be adopted once again for technical reasons after the conformity phase in which legitimacy is predominant (David and Strang, 2006). Similarly, adopters desire to simultaneously obtain social and economic benefits in every phase of diffusion (Kennedy and Fiss, 2009). Moreover, diffusion is increasingly interpreted in terms of 'social diffusion' as practices, no matter their intrinsic characteristics, could widely spread if properly formulated, packed and supported by key actors (Czarniawska and Sevón, 1996; Hedmo et al., 2005; Sahlin and Wedlin, 2008). Finally, it has been demonstrated that institutionalization and diffusion are different concepts (Colyvas and Johnson, 2011). To sum up we could say that, more or less consciously, new institutional scholars are increasingly debating and refining diffusion arguments.

The aim of this chapter is to review the ongoing debate in new institutional research involving diffusion arguments. In doing so, we adopt the viewpoint of diffusion scholars, i.e. those scholars investigating why and how new ideas, objects and practices spread in a population of potential adopters using the framework elaborated by Everett Rogers (Rogers, 1962; Rogers, 2003). We first briefly review this framework and how it has been applied in new institutional research (section 1.2). On this basis, we identify the two main debates in which diffusion arguments are involved (section 1.3). Finally, we clarify the theoretical and empirical relations existing between diffusion and isomorphism (section 1.4), diffusion and legitimacy (section 1.5) and diffusion and institutionalization (section 1.6).

1.2 Theory of diffusion in a nutshell

Generally speaking, diffusion studies the introduction and the spreading of something new (i.e. the innovation) in a community of potential adopters. Several research fields in social sciences have been fascinated by the opportunity to identify the mechanisms, the patterns and the causal relations capable to support (or to impede) the diffusion of a particular object of analysis (Katz et al., 1963; Rogers, 2003; Strang and Meyer, 1993). For instance, scholars have investigated the role of high-status experts in early stages of diffusion (Coleman et al., 1957; Coleman et al., 1966), the personal

influence exerted by opinion leaders in a group of peers (Katz and Lazarsfeld, 1955) and the process of gradual saturation that lead the diffusion to become self sustaining (Mansfield, 1961). All studies displayed an astonishing S-shaped curve of cumulative adoption over time (Rogers, 1958). In 1962 Everett Rogers synthesized the theoretical arguments previously developed in other disciplines in a comprehensive framework simultaneously capable to shed light on the process of diffusion, on individual adoption-decision and on the various categories of adopters (Rogers, 1962). This framework has been constantly refined over time (Rogers, 1995; Rogers, 2003; Rogers and Shoemaker, 1971) and nowadays it is considered the standard theoretical model to study diffusion (Rogers, 2003). Even new institutional scholars recognize the rule-like ability of this framework to explain diffusion (Colyvas and Johnson, 2011; Rogers, 2003; Strang and Soule, 1998).

According to this framework, the decision to adopt an innovation is a process through which potential adopters (individuals, organizations, systems) evaluate a new idea, form an attitude towards it and finally decide whatever to opt for it or not. Compared to other decision making activities, the decision to adopt or reject an innovation brings high levels of uncertainty due to the newness of the innovation. This process essentially implies seeking and processing information capable to reduce this ambiguity. According to Rogers, a potential adopter has to become conscious of an innovation (knowledge phase) before actively seeking information to form an attitude towards its potential adoption (persuasion phase). On this basis, the adoption decision is taken by comparing the potential advantages and disadvantages of the innovation (decision phase). After the decision phase, the adopter concretely uses the innovation (implementation phase) and evaluates the results of the adoption (conformation phase). The interplay of interpersonal networks, mass media and change agents are considered important factors capable to explain why a member in a social system choose to adopt. On this basis, a diffusion process always resolves into four elements:

1. *Innovation*. When we refer to an 'innovation', we implicitly imagine a new technology or product. However, Rogers refers to an innovation as "an idea, a practice or a object that is perceived as new by an individual or other units of adoption. An innovation presents an individual or an organization with a new alternative or alternatives, as well as new means of solving problems" (Rogers, 2003 : xx). What clearly emerges from this definition is the possibility to apply the theory in situations in which the diffusing item is different from a technology. The domain of applicability is even more extended if we consider the characteristic of 'perceived newness'. Simply speaking, a diffusing item has to be perceived as new in the community of potential adopters rather than be original in absolute terms (i.e. the diffusing item could have been invented several years before);

2. *Social system*, defined by Rogers as "a set of interrelated units engaged in joint problem solving to accomplish a common goal" (Rogers, 2003 :23). Due to the fact that diffusion takes place in a social system, it's obvious that its characteristics frame the ability of a potential adopter to develop new ideas and to accept their introduction. Moreover, social systems define the norms for diffusion, the rules of adoption decisions (i.e. decision to innovate could be taken by few individuals, by the whole system through a community decision or by each single potential adopter) and the amount of influence that opinion leaders can exert;
3. *Communication channels*. Diffusion is essentially a process in which an innovation is communicated through certain channels to potential adopters. Therefore, members in a social systems use these channels to create and share useful information to reach a mutual understanding on the innovation. A communication channel could vary from mass media to interpersonal relations. Mass media rapidly spread knowledge to a great number of potential adopters making the innovation familiar and desirable, while interpersonal relations are usually more effective in changing the beliefs of potential adopters;
4. *Time*. Time is a central variable to explain the process of diffusion, the categorization of adopters and the rate of adoption.

Following these arguments, diffusion scholars classify potential adopters in five categories based on the relatively earliness in adopting new ideas (i.e. their innovativeness): innovators, early adopters, early majority, late majority and laggards. These categories are ideal types that could explain the different behaviors during the process of diffusion. For instance while innovators are excited by the possibilities of the innovation and face the higher uncertainty, early adopters base their adoption-decision on the information they could obtain from innovators. Early adopters further contribute to reduce uncertainty for other potential adopters. In a given point of time, continuous reduction of uncertainty leads to a situation in which a diffusion process becomes self-sustaining. These arguments explain both the diffusion of innovations among individuals and organizations.

In summary, we could state that the diffusion framework sheds light on a process of contagion, reinforcement and feedback to ensure that something new is accepted in a social system. The perceived attributes of the innovation, the characteristics of the social system and the alignment with social and cultural elements of the potential adopters are central to foster the process of adoption. New institutionalism in organizational theory appears to be a natural loci to apply diffusion arguments. First, diffusion has been identified as one of the key mechanisms in the study of organizations (Davis and Marquis, 2005). Second, the process of diffusion of organizational

structures and practices is influenced by the social system in which organizations are embedded (Colyvas and Johnson, 2011). While rational actor models are still dominant to explain adoption decisions (Ansari et al., 2010), shared social values, taken-for-grantedness, norms and cultural-cognitive elements influence the process of diffusion.

1.3 Debating diffusion in new institutional research

We start our discussion by recalling how some of the central ideas in Rogers' framework have been applied in new institutional research. Organizational scholars essentially use two models to explain diffusion (Colyvas and Johnson, 2011; Strang and Soule, 1998). The former model relies on the idea that practices spread thanks to the influence of the mass media, the State and the professional associations (i.e. external sources). These sources of information reduce the uncertainty surrounding the innovation by sharing useful knowledge about it (e.g. (Abrahamson and Fairchild, 1999; Edelman, 1990; Edelman, 1992; Strang and Meyer, 1993). By contrast, the latter model applies the idea of social contagion. Following a medical metaphor, social contagion explains diffusion using a combination of individual vulnerability, infectiousness and relational proximity with prior adopters (Centola and Macy, 2007; Strang and Tuma, 1993). In other words, diffusion follows the strong and weak ties in which organizations are embedded, the prestige of some members in the community, the spatial proximity and the cultural categories shared by potential adopters (e.g. (Davis, 1991; Davis and Greve, 1997; Fligstein, 1985; Fligstein, 1987; Haunschild, 1993). Contagion mechanisms have been extended to include shared identities and social categories capable to generate expectations of adoption (Jonsson, 2009; Strang and Meyer, 1993). All these mechanisms clearly recall the search for useful information to support adoption decision, the use of communication channels and the characteristics of the social system characterizing diffusion of innovation theory. In addition, the labels used in new institutional research and in diffusion of innovation theory to refer to a diffusing item are essentially interchangeable. Due to the fact that institutional arguments have been applied to a wide range of topics (e.g. organizational structures, organizational forms, strategies, managerial ideas, administrative innovations), Strang and Soule (1998) introduced the definition of 'practice':

"We use the term "practice" to denote the diffusing item, which might be a behavior, strategy, belief, technology, or structure. Diffusion is the most general and abstract term we have for this sort of process, embracing contagion, mimicry, social learning, organized dissemination, and other family members" (Strang and Soule, 1998: 266)

This definition of a 'practice' is conceptually similar to the general definition of 'innovation' as defined by Rogers (2003): an idea, a practice or a project perceived as new by a community of potential adopters. It seems obvious that a 'practice' at the beginning of its diffusion is an

'innovation' and a successful 'innovation' slowly becomes a 'practice' that is diffusing. In fact, the definition of an 'innovation' stresses the newness of the diffusing item and the related uncertainty. We contend that an innovation is 'original' only for innovators and early adopters (i.e. the group of adopters facing the higher degree of uncertainty), but the more an innovation is adopted the lower is its perceived originality and uncertainty.

However, some similarities between Rogers' framework and the concepts used in new institutional research can be misleading. As an example, diffusion usually follows an S-shape curve since "the proportion of the system that has adopted the innovation over time starts out low, slowly builds to a critical mass where it achieves exponential growth, and finally levels off as it saturates the system" (Rossman, 2009). In diffusion studies, this curve represents the cumulative number of adopters in the population in which an innovation is diffusing. Similarly, new institutional scholars have developed a S-shaped curve to graphically represent the process of institutionalization¹, i.e. the typical life cycle of an institution (Lawrence et al., 2001; Powell and Dimaggio, 1991). In order to become an institution, a social object needs to be introduced and it has to be increasingly adopted until it acquires full legitimation (institutionalization phase). Once institutionalized, the object is perceived as an objective fact in social reality until the moment in which this status is challenged (deinstitutionalization phase). It clearly emerges that the diffusion S-shaped curve represents the gradual spreading among a population, while the institutionalization curve refers to the degree to which a practice is perceived as a stable social fact. Therefore, in a given point of time, an object can be institutionalized without being diffused or it can be widely diffused even if its stability is being challenged (i.e. it is deinstitutionalized). Despite these conceptual distinctions, a great number of scholars still conflate the phases of institutionalization with the phases of diffusion (Colyvas and Johnson, 2011). Similarly, diffusion is one of the stages in the process of institutional change² (Greenwood et al., 2002). According to this literature, changes in institutional environment are generated by technological, social or regulatory jolts that institutional entrepreneurs decide to exploit. These actors help to identify organizational fails and to develop a new practice that is presented as the more appropriate solution to a given organizational problem³. If these activities are successful, then the innovative practice can diffuse in an organizational field, increase its legitimacy

¹ Despite the fact that institutionalization process is usually typified using the S-shape curve, it has been argued that the form of the curve can be influenced by the institutional mechanism used by agents supporting institutionalization (Lawrence et al., 2001).

² Institutional change is simply the difference in form, quality or state over time in an institution (Hargrave and Van De Ven, 2006).

³ "Theorization is the development and specification of abstract categories and the elaboration of chains of cause and effect. Such theoretical accounts simplify and distill the properties of new practices and explain the outcomes they produce. In effect, theorization is the process whereby localized deviations from prevailing conventions become abstracted (Abbott, 1988) and thus made available in simplified form for wider adoption" (Greenwood et al., 2002).

and become taken-for-granted (re-institutionalization). However, re-institutionalization is not always successful and diffusion could lead to fads or fashions (i.e. practices that diffuse, but not become permanent). In institutional change literature, diffusion is also a mechanism through which existing institutions contrast the action of institutional entrepreneurs (Pratt, 2007). In simple terms, if a social object is widely diffused, it is probably perceived as taken-for-granted and it is therefore more unlikely to be challenged. In this sense, diffusion is more similar to a 'defensive mechanism' through which institutions try to survive. This is clearly different from the ideas elaborated by Rogers (2003) in which diffusion refers to the mechanisms and the reasons through which a practice spread in a given population, no matter its stability.

After this preliminary analysis, we now turn to review the state-of-the-art of the two main debates in new institutional research in which diffusion arguments are involved. While the former investigates *what factors* enable diffusion in a social system, the latter is focused on developing a model capable to link the *motivations of adoption* to a well specified phase of diffusion.

1.3.1 Rational diffusion and social diffusion

The debate investigating those factors enabling diffusion in a social system is dominated by two schools of thought: rational diffusion and social diffusion. The former school of thought follows the assumption that an innovation widely diffuses thanks to its superior attributes. Let's think about a new solar cell based on a new material providing a more efficient production than the well known silicon-cells. *Ceteris paribus*, an householder that desire to install a solar plant on his roof will probably choose the new solar cells. Simply speaking, a rational logic is applied in adoption decisions as the new technology appears to be more effective than other alternatives. On this basis, a great number of macro-level diffusion studies in new institutional research have focused on the intrinsic characteristics of a practice to explain its spreading (Baron et al., 1986; Westphal et al., 1997; Westphal and Zajac, 1994b; Westphal and Zajac, 2001). In order to justify successful diffusion, these studies assume that the practice will not change while diffusing across time and space. This is, obviously, a strong idea as it implies that organizations have a very limited possibility to customize the practice being adopted. Only recently the idea that a practice can evolve thanks to the combination of population-level mechanism of diffusion and organizational-level mechanisms of implementation (Ansari et al., 2010; Fiss et al., 2012; Fiss and Zajac, 2006). Different patterns of adoption can also emerge due to technical, cultural and political incompatibilities existing between the practice and the adopters. These arguments have been applied to situations of contested diffusion in which adopters of a given practice face a loss of legitimacy (Fiss et al., 2012).

If we strictly follow this first line of reasoning every aspect of the society should be characterized by efficiency and effectiveness⁴. Clearly, this is not always the case. Society is plenty of practices that have failed to spread (or have a limited diffusion) despite their clear superior characteristics. By contrast, a bad idea could widely spread if properly formulated, packed and supported by key actors in the society. These situations can be easily explained if we adopt a social approach to diffusion. This latter line of reasoning characterized the so-called Scandinavian institutionalism (Czarniawska and Sevón, 1996), a group of organizational scholars from Denmark, Sweden and Norway that explain diffusion using the social mechanisms of 'imitation' and 'translation'. Due to the fact that organizations want to resemble to other organizations (i.e. they want to imitate other organizations), diffusion is seen as a process of circulation and translation of practices/ideas within social groups. Imitation could be used to explain organizational mimesis and the behaviors of peripheral and dominant organizations (Sahlin and Wedlin, 2008). Dominant organizations are models for the rest of the organizational field and tend to protect their status, while peripheral ones try to challenge the existing situation. Scandinavian institutionalism goes a step further in the study of diffusion while stating that organizations do not simply imitate, but they 'translate' organizational structures and activities during adoption. Simply speaking, organizations transform and edit ideas in order to make them more suitable for their local contexts (Czarniawska and Sevón, 1996; Sahlin and Wedlin, 2008). As a result, new ideas and practices are more or less deliberately transformed while they are moving from one setting to another and therefore continuously adopted and changed.

Two logics seem to explain this continuous process of imitation sustaining the circulation of new ideas and practices (Sahlin and Wedlin, 2008). According to the former logic organizations want to be considered appropriate with social expectations, identities and rules of action coming from the social environment (i.e. appropriateness logic). The latter logic, labeled as 'fashion follower', emphasizes that organizations adopt an idea following a relatively transitory collective belief that consider such idea as highly innovative, rational and progressive (Abrahamson, 1991; Abrahamson, 1996; Abrahamson and Fairchild, 1999). In extreme synthesis, fashion follower logic implies that some managerial ideas and techniques tend to present, over time, booms and busts in popularity similar to the popularity curves in real fashion and fads (Rovik, 2011). Fashion setters realize a series of activities to transform managerial ideas in commodities that can be sold in the knowledge market (Anand et al., 2007), to develop new concepts following the preferences of their clients (Heusinkveld et al., 2009) and to deal with competitive pressures coming from competitors

⁴ "[In traditional approach] Diffusion was easily associated with a physical process, as though what was spreading was a physical entity originating from one source and then becoming (while gaining its power to spread from this source) more diffused and diffused. [...] The perspective is an instrumental one - good and powerful ideas are assumed to spread more widely than less effective ones" (Sahlin and Wedlin, 2008: 221).

(Heusinkveld et al., 2013). On this basis, imitation among organizations follow different ideal-types: broadcasting mode, chain mode and mediated mode (Hedmo et al., 2005). In 'broadcasting imitation' an organization becomes the model that is adopted by other organizations that actively spread this model among other organizations. While in 'chain imitation' the model is copied by an organization that is in turn imitated by other organizations, in 'mediated imitation' some actors (e.g. consultants) act as carriers for the model.

In conclusion, we could say that these two schools of thought are not mutually exclusive. They simply stress different aspects that diffusion of innovation theory uses to justify the spread of an innovation. We could image that an innovation with superior characteristics will diffuse in a relatively short time if properly packed and supported by key actors, if it is coherent with the existing beliefs, if it could be easily adapted by organizations and so on.

1.3.2 Motivations of adoption and diffusion

One of the central ideas in diffusion studies is probably the possibility to connect adoption motivations to a well-identified phase of diffusion. This idea was strongly embedded in the so-called two-stages model of diffusion, first elaborated by Tolbert and Zucker in their study on the diffusion of civil service employment practices in US local governments from 1880 to 1935 (Tolbert and Zucker, 1983). Following the rationalized myth on the superior efficiency of business sector hiring practices, this study highlights the presence of two stages in diffusion processes. While early adopters were really committed in improving their efficiency by adopting private sector practices, after 1915 municipalities choose to adopt these practices because private sector hiring practices were considered part of a rational and modern organizational structure. In this sense, early adopters seek the practice's potential benefits (technical or economic), while late adopters are more interested in the legitimacy they could gain by conforming to social expectations. As a result, institutional motives of adoption are clearly present in late phases of diffusion. We admit that this idea is intriguing, but it was poorly operationalized as the underlying motivations of adoption were not directly asked to potential adopters. Tolbert and Zucker assumed that legitimacy reasons were predominant for later adopters due to the absence of functional ones explaining adoption decisions. Despite this weakness, the insight that adoption motivations are characterized by two stages pioneered a great number of studies (Baron et al., 1986; Fligstein, 1985; Fligstein, 1987; Haveman, 1993; Tolbert and Zucker, 1983; Westphal et al., 1997; Zajac and Westphal, 2004), even though empirical evidence did not always support it (Burns and Wholey, 1993; Goodstein, 1994; Kraatz and Zajac, 1996; Sherer and Lee, 2002).

Following the two-stages model arguments, the importance of technical motivations will decline over time as they are increasingly substituted by legitimacy motivations. We see a strong assertion on human behavior here as later adopters seem not to care any more on the potential economic and technical benefits granted by the innovation. This is clearly not reasonable. Scholars are increasingly interested in this theoretical limit and only recently they are devoting a substantial effort to refine it. Based on the study of the spread of TQM techniques, it has been demonstrated that some practices could be adopted once again for technical reasons after the conformity phase (David and Strang, 2006). The development of a framing perspective to diffusion arguments allow to shed light on the fact that early and late adopters simultaneously use economic and social motivations in their adoption decisions (Kennedy and Fiss, 2009). Traditional diffusion studies have also increasingly been criticized due to the presence of a so-called 'pro-innovation bias', the displayed tendency to focus on successful practices. This tendency leads to a systematic underestimation of the difficulty by which most new practices spread (Jonsson, 2009). Similarly, the tendency to use historical data of widely-diffused practices and large populations of adopters has lead to a systematic under-estimation of the importance of contagion effects (Denrell and Kovacs, 2008).

In conclusion, we could argue that the ongoing debates on diffusion arguments in new institutionalism provides exciting possibilities to extend our knowledge in the research field. However, these possibilities have to be carefully explored. New institutional theory appears to be very intuitive and easily applicable to a wide range of situations. However, this intuitiveness could be misleading as new institutional arguments could be easily conflated and misinterpreted (Boxenbaum and Jonsson, 2008; Colyvas and Johnson, 2011; Droege et al., 2011; Greenwood et al., 2008; Heusinkveld et al., 2013). Moreover, some of the central concepts and relations used in new institutional theory are similar to those developed in other theories (Palmer et al., 2008). For instance, it is widely recognized that legitimacy has been first developed in sociology by Max Weber (Johnson et al., 2006) and it was already used in old institutionalism and in resource dependence perspectives (Selznick, 1996). Similarly, organizational isomorphism is used in population ecology and strategic choice theories (Oliver, 1988)⁵. Scholars could simply think to add some 'sociological flavor' to these concepts, without fully acknowledging the sociological roots of new institutional research (Palmer et al., 2008). Therefore, a more fine-grained attention to concepts and empirical verification appears as a necessity in order to further develop the theory (Greenwood

⁵ Due to this similarities, a growing number of studies propose to create conceptual relations with new institutional theories and other similar research traditions (Haveman and David, 2008; Hirsch and Lounsbury, 1997; Oliver, 1988; Selznick, 1996; Zucker, 1989).

et al., 2008). These warnings are also true for diffusion. As previously discussed, not everything that is diffusing is automatically institutionalized. Similarly, the spreading of a practice does not necessarily mean a process of institutional isomorphism. Therefore, in the following sections we will discuss the relations existing between diffusion and isomorphism (section 1.4), diffusion and legitimacy (section 1.5) and diffusion and institutionalization (section 1.6).

1.4 Diffusion and institutional isomorphism

Institutional isomorphism is probably the most distinctive concepts of new institutional research. In their seminal work on the diffusion of bureaucracies in modern society, Meyer and Rowan shown that organizations can choose to incorporate practices and procedures independently from their real efficiency in their formal structures (Meyer and Rowan, 1977). Following powerful rationalized myths that consider these practices as proper and necessary, an organization conforms to its institutional environment (i.e. it becomes isomorphic) in order to increase its chances to survive. Conformity could bring some valuable advantages such as legitimacy, external support, access to resources and reduction in internal dissent⁶. Due to the fact that institutional conformity could conflict with efficiency, an organization could disconnect its formal structure from everyday activities (decoupling) in order to simultaneously reach efficiency and legitimacy. This model was, obviously, too general to explain the behavior of all kinds of organizations. Therefore, Meyer and Rowan predict the existence of two ideal-types of organizations: fully technical and fully institutionalized. The former ideal-type refers to those firms basing their survival on efficiency and market logics, on the ability to solve technical problems and on the use of well-defined productive technologies. By contrast, the latter ideal-type refers to organizations that react to environmental threats by conforming to institutional rules as they use ambiguous technologies, produce outputs difficult to evaluate (e.g. school, governments, R&D units) or operate in highly institutionalized environments. These ideal-types are two extremes of a continuum in which an organization could collocate and move over time.

In the seventies, this model of institutional isomorphism was highly innovative as organizations were essentially conceptualized as production and exchange systems. Organizational structure was perceived as a mere consequence of the type of technologies, the transactions and the power relations emerging from resource dependence existing in the environment (Scott, 1987).

⁶ A lack of conformity to institutional environment could also lead to unpleasant consequences: "Organizations that omit environmentally legitimated elements of structure or create unique structure lack acceptable legitimated accounts of their activities. Such organizations are more vulnerable to claims that they are negligent, irrational or unnecessary" (Meyer and Rowan, 1977).

Nowadays it is incorrect to say that there is a single theory of institutional isomorphism. As a matter of fact, isomorphic arguments began to be simultaneously developed in Stanford University and in Yale University (Scott, 2005). The former theory of institutional isomorphism was developed in Stanford University based on Meyer's early work on social norms constraining human behavior. Following these ideas, Scott and Rowan developed an idea of modern society in which formal structures are created and spread following norms of rationality (Meyer and Rowan, 1983; Scott, 1983; Scott and Meyer, 1983). Due to the fact that organizations are embedded in technical and institutional environments⁷, structural similarities among organizations emerge as efforts to conform to these normative pressures. In other words, certain organizational structures are widely diffused as they represent myths of rationality elaborated by the State and the professions. In order to empirically demonstrate the resulting isomorphism, this line of research typically adopt rationalized cultural elements operating at societal level with a worldwide diffusion (e.g. accountability requests in public sector or stock markets as an efficient mean to exchange capitals) (Boxenbaum and Jonsson, 2008; Hallett, 2010; Meyer et al., 1997; Weber et al., 2009). The second theory of institutional isomorphism was developed in Yale University to investigate the structural dynamics characterizing specific fields in modern society (DiMaggio and Powell, 1983). Mayer and Rowan (1977) claimed that the State and the professional associations are pushing to structural uniformity, but we could say that this was a quite general assertion as they clearly could not be accountable for all the isomorphic processes in the society. Therefore, scholars simply narrowed the area of action of institutional isomorphism from the society to the organizational fields⁸ (DiMaggio and Powell, 1983). In their influential contribution DiMaggio and Powell defined an organizational field as "sets of organizations that, in the aggregate, constitute an area of institutional life; key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products" (DiMaggio and Powell, 1983: 148). According to this view, a community of organizations (i.e. a system of actors, actions and relations) directly interact with one another (or influence each other) more frequently than actors outside the field (Scott, 1995). This point of view allows researchers to observe these actors operating in an institutional context rather than actors themselves (Davis and Marquis, 2005). These patterns of interaction are defined by the

⁷ Technical environment are "those within which a product or service is exchanged in a market such that organizations are rewarded for effective and efficient control of the work process"(Scott and Meyer, 1983: 140), while institutional environments "are characterized by the elaboration of rules and requirements to which individual organizations must conform if they are to receive support and legitimacy" (Scott and Meyer, 1983: 149).

⁸ Stanford University research group developed a similar idea by adopting the concept of societal sector (Scott and Meyer, 1983). In contrast to the relational features of the field, the societal sector emphasized the tendency of policies, programs and agencies to become more and more specialized in well defined sectors of modern society creating a huge system of vertical relations. Therefore, in a societal sector institutional environment is strongly related to technical problems. Moreover, institutional change is more dependent on technical development rather than to the gradual structuration of the organizational field (Boxenbaum and Jonsson, 2008).

shared systems of meaning that establish the boundaries of the community, the criteria needed to be part of it, the expected behavior of the members and the relationships with other communities⁹. One could say that an organizational field is simply a new label for the concept of industry. Admittedly, early theoretical formulations supported this idea as researchers overstressed that field members were operating with a common technology, in the same markets or in relatively stable product (or service) areas. Heugenes and Lander (2007) have recently clarified this point claiming that this statement is misleading. If we analyze the diffusion of an organizational practice using the concept of industry, we are simply analyzing a process of vicarious learning that pushes organizations to adopt more efficient solutions to effectively compete for resources and customers (i.e. competitive isomorphism). By contrast, institutional isomorphism emerges only if a practice spread in a community of organizations because it makes them to appear as rational and legitimate (Heugenes and Lander, 2007). We can say that practices diffuse because they are perceived as legitimated solutions chosen by the collectivity in which an organization is embedded (i.e. organizations are isomorphic *within* their organizational field). DiMaggio and Powell identified three sources of rationalization¹⁰ (i.e. the profession, the State and the market) that correspond to three forms of institutional pressures (i.e. normative, coercive and mimetic). This tri-partition is essentially analytical as it tries to distinguish the different conditions from which institutional isomorphism emerges in organizational fields. For instance, coercive pressures refer to more or less formal requests to adopt specific structures coming from the State or other powerful organizations in order to avoid sanctions, to obtain benefits (e.g. grants) or to access to valuable resources. Mimetic pressures emerge from ambiguity and uncertainty pushing organizations to imitate other organizations perceived as successful in the field¹¹. Finally, normative pressures emerge due to the action of universities and professional training that develop normative rules on how to solve organizational problems. Once trained in universities, managers and professionals tend to apply these normative solutions to all organizations in the field leading to an increasing homogeneity over time. The likelihood of homogeneity is even greater in the cases in which skill requirements, hiring

⁹ In DiMaggio and Powell's words the development of an organizational field is characterized by "an increase in the extent of interaction among organizations in the field; the emergence of sharply defined structures of organizational domination and patterns of coalition; an increase in the information load with which organizations in a field must contend; and the development of a mutual awareness among participants in a set of organizations that they are involved in a common enterprise" (Dimaggio and Powell, 1983 :148).

¹⁰ It is often forget that DiMaggio and Powell simply revisited the idea of the "iron cage" as this idea was previously used by Weber to explain the spreading of the bureaucratic form (Weber, 1952; Weber, 1968). According to the authors, in the second half of the twentieth century marketplace is no more the main cause of structural change in organizations as claimed by Weber. The "iron cage" now relies also on the State and the profession to explain the process of diffusion.

¹¹ In other words, a successful organization is simply a convenient source of potential solutions for organizational problems (Galashewicz and Wasserman, 1989). We point out that mimesis does not necessarily come from a single organization as it has been proven that decision makers could refer also to legitimacy-based reference groups (Barreto and Baden-Fuller, 2006).

practices and promotion mechanism are the same in all those organizations forming the field. This theory of isomorphism developed by DiMaggio and Powell become one of the most cited articles in sociological and organizational research (Greenwood and Meyer, 2008; Greenwood et al., 2008; Mizruchi and Fein, 1999). A great number of studies adopt the organizational field as level of analysis (Greenwood and Meyer, 2008; Scott, 2008a). Organizational fields could be used as dependent variables, independent variables or simply as an intermediate construct between a single organization and the society (Scott, 1995). Coercive, mimetic and normative isomorphism have been respectively linked to external, peer and internal diffusion pressures (Strang and Soule, 1998). Despite that institutional isomorphism has been studied for a wide range of organizational practices and structures (Fligstein, 1991; Palmer et al., 1993; Tolbert and Zucker, 1983; Zajac and Westphal, 2004), mimetic and coercive pressures are the most studied forms of isomorphism (Mizruchi and Fein, 1999). Recent meta-analytical techniques highlight that mimetic pressures have a great influence on isomorphism, while the influence of normative and coercive factors is less supported (Heugenes and Lander, 2007; Heugenes and Lander, 2009). It has also been suggested to integrate the three pressures with competition to explain both institutional homogenization and institutional divergence (Beckert, 2010).

After this brief review of the theories of institutional isomorphism, we could discuss their connections with diffusion arguments. We can say that the theoretical connection between diffusion and isomorphism relies on the assertion that organizations in a organizational field are under the pressure of an "iron cage" formed by coercive, normative and mimetic pressures. Therefore, certain organizational practices and structures are widely diffused in organizational fields. Several empirical studies consider institutional isomorphism as the *cause* of diffusion as isomorphic pressures are usually contrasted with efficiency or resource dependency arguments in order to explain why a certain practice is diffusing (Fligstein, 1985; Haveman, 1993; Kraatz and Zajac, 1996; Palmer et al., 1993; Tolbert and Zucker, 1983). Simply speaking, these scholars argue that the absence of efficiency reasons for adoption means that a given practice has diffused for institutional reasons. We agree on the claim that these studies do not really investigate the resulting level of isomorphism in the field, but simply demonstrate that some mechanisms supporting diffusion are working (Boxenbaum and Jonsson, 2008). This confusion emerges because coercive, normative and mimetic pressures have been increasingly seen as mechanisms for diffusion rather than pathways to institutionally induced isomorphism (Greenwood and Meyer, 2008). To us, it seems obvious that the combined effects of coercive, normative and mimetic pressures have an influence on the

adoption of a practice over time¹². For instance, the compulsory adoption of a practice imposed by law leads to a faster diffusion if compared to cases of voluntary adoption (Tolbert and Zucker, 1983), while legal ambiguity could limit diffusion in early-stages because organizations lose time by experimenting diverse ways to demonstrate compliance (Edelman, 1992).

In addition to these considerations, we want to elucidate a few other ideas that could help to distinguish diffusion from institutional isomorphism. First, we claim that isomorphism and diffusion are attributes of different objects. In particular, isomorphism is an attribute of the organizational field as a whole, while diffusion is an attribute of an organizational practice or structure (i.e. the diffusing item). The more an organizational field becomes mature (i.e. well-defined and structured), the clearer it becomes what are the structures and practices that organizations within the field should adopt. Following this reasoning, organizations could choose their actions among a narrowly defined set of legitimated options determined by the members of the field (Scott, 1991). Therefore, each option could be more or less diffused in the field and its rate of diffusion could vary over time.

Second, diffusion simply signals a process of institutional isomorphism. As previously discussed, a practice could spread for reasons different from the search of legitimacy coming from the structuration of the field. An innovation could be adopted for purely efficiency reasons and this is clearly not an institutional effect. By contrast, "if a firms adopts an innovation because it believes that doing so provides legitimacy that behavior is an institutional effect" (Greenwood et al., 2008: 11-12). We could image that institutional isomorphism occurs only when conformity in structures and practices emerge thank to the action of taken-for-granted cognitive elements operating in the field. In other words, it is fundamental to shed light on the micro-processes through which organizations become more alike in order to identify truly institutional forms of isomorphism (Nelson and Namrata, 2008).

Third, measuring the diffusion of a practice is not equal to empirically assess its institutional isomorphism. Generally speaking, diversity in organizational forms and practices are present in the early life of an organizational environment (Dimaggio and Powell, 1983). Organizations do not simply become *similar* (as many scholars argue), but they are *increasingly similar* thanks to the pressures coming from the common environment they share. Stang and Soule (1998) claims that the 'iron cage' proposed by DiMaggio and Powell (1983) could be easily read as a conceptual mapping of coercive, mimetic and normative sources of homogeneity operating in the field. The more an organizational field is structured, the stronger are the coercive, normative and mimetic pressures

¹² Clearly it is very difficult to distinguish the effect of these three institutional pressures in real world as they do not always support each other (e.g. diffusion could be reduced because normative pressures are somehow not coherent with cultural-cognitive aspects present in the society).

and the higher is the level of conformity to a particular practice¹³. For an abstract point of view, total homogeneity in the field means that a practice is diffused among all the potential adopters. However, institutional isomorphism is also present if several alternative legitimate organizational structures (or practices) are used by field members. In other words, an organization could be institutionally isomorphic by adopting one of them. This claim arises from the fact that isomorphism could be conceptualized either as:

- *a state*. In this case isomorphism could be measured evaluating that extent to which an organization has similar attributes compared to other organizations in the field in a given point of time. Isomorphism is binary for some attributes (e.g. "whether a municipality has adopted civil service reform"(Deephouse and Carter, 2005)), while other attributes need a more fine-grained analysis to evaluate the degree of similarity reached (Deephouse, 1996; Haveman, 1993);
- *a process*. In this case, the concept of isomorphism is related to the "individual efforts to deal rationally with uncertainty and constrain often lead, in the aggregate, to homogeneity in structure, culture and output" (DiMaggio and Powell, 1983: 147). Therefore, the presence of isomorphism is confirmed by a growing homogeneity (i.e. similarity) in a field over time. As clearly stated by DiMaggio and Powell "since the effect of institutional isomorphism is homogenization, the best indicator of isomorphic change is a decrease in variation and diversity, which could be measured by lower standard deviations of the values of selected indicators in a set of organizations" (DiMaggio and Powell, 1983). Elsewhere it has been argued that "institutional isomorphism is manifested empirically as increased conformity" (Westphal and Zajac, 1997: 371).

It has been correctly argued that the idea of field homogeneity has been misinterpreted by researchers "who treated homogeneity as a synonymous with institutional isomorphism, when in fact homogeneity is only one possible effect of institutional pressures and one, that is not, in our view, a definitional one" (Greenwood et al., 2008: 6). Simply speaking, the full homogeneity in structures and practices in a field (i.e. their diffusion among all the organizations) is very hard to find as it is increasingly acknowledged that mature organizational fields manifest tendencies to polymorphism (or to lower levels of conformity than expected) rather than isomorphism (Greenwood and Meyer, 2008; Greenwood et al., 2011; Scott, 2008a). A variety of reasons could explain this phenomena. First, isomorphism in the field could be limited by competition pressures,

¹³ This idea is supported by the fact that field structuration process was originally claimed to exercise an homogeneous pressure on organizations (Scott, 1995; Scott, 2001).

by geographical barriers and by the changes in the institutional environment (Boxenbaum and Battilana, 2005; Dacin, 1997; Greve, 1996; Kraatz and Zajac, 1996; Ruef and Scott, 1998; Schneiberg and Clemens, 2006; Zilber, 2002). Second, organizational fields are increasingly seen as 'centers of discussion', i.e. relational spaces in which organizations collectively debate on their relevant problems (Hoffman, 1999; Wooten and Hoffman, 2008). Due to the fact that each field constituent has its own interests and perspective on a relevant problem, different legitimated solutions could emerge due to the multiple interactions of field members and the power balance among them. Third, conformity pressures are usually vague and tend to vary over time and space (Dacin, 1997), leading to the simultaneously development of different symbolic and cultural systems (Scott, 1991). Organizations could choose to respond only to part of these contrasting pressures (Boxenbaum and Jonsson, 2008), they could act strategically to influence them (Lawrence, 1999; Oliver, 1991b), they could simply misinterpret them due to the presence of sense making, issue interpretation, selective attention and cognitive framing (Hoffman and Ocasio, 2001; Hoffman and Ventresca, 2002). Finally, organizations could also not have the internal capacity to answer to the environmental pressures (Barman and Macindoe, 2012). In summary, all these arguments lead to the conclusion that several legitimated solutions could emerge in an organizational field. Therefore, equivalent organizational practices and structures with different degrees of diffusion in the field could be a result of a process of institutional polymorphism.

1.5 Diffusion and legitimacy

Investigating legitimacy is probably one of the central concerns in new institutional research. Meyer and Rowan argue that organizations search legitimacy to be considered as an accepted part of a modern society (Meyer and Rowan, 1977). Meyer and Scott identified legitimacy as the cultural support for an organization that explains its existence, functioning and goals (Meyer and Scott, 1983). In other words, an organization is fully legitimated if virtually no question on the adequacy of its parts, functions or goals could be raised (i.e. other organizational forms are meaningless). In their two-stages model of diffusion, Tolbert and Zucker argue that early adopters are interested in efficiency, while late adopters choose a practice to respond to conformity pressures (Tolbert and Zucker, 1983). This idea has influenced the way in which generations of new institutional scholars have thought about the relation between diffusion and legitimacy. The more a practice is diffused, the more it becomes legitimated and the more late adopters seek legitimacy reasons rather than efficiency ones. We do not fully agree with this argument as it is not necessarily true that the more a practice is diffusing the more it acquires legitimacy. In order to support our claim, we first have to understand what legitimacy means in new institutionalism. Legitimacy could either refer to a social

process or to an attribute of a given social object. On this basis, we'll discuss how organizations acquire, manage and could take advantage from their legitimacy.

1.5.1 Legitimacy as a process

Legitimacy refers to a process by which a social object is made acceptable to a group by connecting it to existing norms and social values (i.e. legitimation). In doing so, legitimacy also justifies the existence of a given social order by providing both cognitive and normative dignity to its existence. In other words, legitimation is the process by social order is justified to new generations through the production of meanings external to individuals (Berger and Luckmann, 1967). Due to the fact that legitimation is a process, not all social objects have the same degree of legitimacy (i.e. a social object could have different degrees of normative and cognitive validity). Therefore, Berger and Luckmann (1967) defined several levels of legitimation to identify the increased objectification of human experiences used to justify a given social order¹⁴. As a social construction, legitimacy is constructed using rhetoric, discursive means, collective actions and social expectations (Deephouse and Suchman, 2008; Golant and Sillince, 2007; Lawrence, 1999; Lawrence and Phillips, 2004; Suddaby and Greenwood, 2005).

On this basis, we precise that legitimation does not necessarily mean institutionalization. We admit that some similarities exist between the two concepts (Johnson et al., 2006; Lawrence et al., 2001). For instance, both legitimacy and institutionalization lead to stability in social action and have an influence on individual behavior. Johnson and colleagues (2006) suggest to consider an institution as a 'legitimated social convention' because legitimation is the process by which a social convention is linked to a parallel cultural-cognitive convention justifying how things should be done. However, we say that institutionalization and legitimacy influence in a slightly different way individual behavior. In institutionalization individuals strictly follow a given behavior due to the presence of cognitive, normative and cultural-cognitive elements. By contrast, in legitimation individuals adhere to a behavior because they desire to appear appropriate to an audience (Droege et al., 2011). In other words, legitimation supports the institutionalization of a practice (i.e. its self-reproduction without any external support) only when the institutionalized practice is connected to a cultural frame stating that it is appropriate. In other words, a practice could be legitimated without becoming

¹⁴ The first level is 'incipient legitimation', a pre-theoretical level based on self-evident knowledge and on linguistic objectification to explain how things are in social reality. The second level is the development of 'rudimentary theoretical propositions', a set of highly pragmatic explanatory schemes useful to relate objective meanings with concrete actions. In the third level of legitimation implies the development of an 'autonomous body of knowledge' in which explicit theories are used to support the existence of a social object. Finally, the last level implies the construction of a 'symbolic universe of social systems, beliefs and practice' increasing the sedimentation of a practice in social reality.

institutionalized. For instance, a law could grant some form of legitimacy and facilitate the spreading of a practice among organizations, but this is not equal to say that this practice is becoming self-reproduced thanks to some form of cultural-cognitive support. Similarly, a faddish managerial practice could have high levels of normative legitimacy (i.e. the support of consultants), but it hardly be considered institutionalized.

1.5.2 Legitimacy as an attribute

As an attribute, legitimacy could operate at individual or at organizational level (Johnson et al., 2006). In the former case, legitimacy is essentially related to the status and to the characteristics of an authority in a social group. In the latter case, organizational legitimacy is a "generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed systems of norms, values, beliefs and definitions" (Suchman, 1995: 574). Legitimacy is a perception in the sense that an organization is observed by other members in the society that react to what they see. Moreover, legitimacy is socially constructed in the sense that it reflects a congruence between the expected behaviors of a legitimated entity and the shared beliefs in a social group. Given that legitimacy essentially means acceptance by an audience, it is important to note that social actors are not all alike in providing legitimacy. Important source of legitimacy for organizations are government regulators (Baum and Oliver, 1991b; Deephouse, 1996; Galaskiewicz, 1985; Meyer and Scott, 1983), social groups with collectively accepted authority (e.g. lawyers, accountants) (Ruef and Scott, 1998), public opinion (Galaskiewicz, 1985; Meyer and Rowan, 1977; Meyer and Scott, 1983), mass media (Deephouse, 1996; Schultz et al., 2013), other legitimated organizations (Galaskiewicz, 1985) and organizational internal audience (Ruef and Scott, 1998). Following this line of reasoning, legitimacy could be measured differently according to its source. Legitimacy from regulatory bodies can be easily measured using the number of registrations, licenses and certifications assigned to the organization, while public legitimacy could be measured by evaluating media reports, critics and challenges moved to an organization (Bitektine, 2011).

1.5.3 Organizational legitimacy

Organizational legitimacy is a form of normative support that an organization acquires by adopting practices and structures linked to a broader cultural-cognitive framework (Colyvas and Johnson, 2011). In other words, organizations are legitimated if they adhere to implicit and/or explicit social expectations (Dimaggio and Powell, 1983; Edelman, 1992). Explicit expectations are clearly declared by powerful social actors (e.g. national government, professional associations), whereas

implicit expectations emerge through the interaction of social actors over time. On this basis, one could argue that 'organizational legitimacy' essentially refers to the 'organizational reputation'. We admit that these two concepts recall social processes in which an organization is evaluated and share several antecedents (e.g. organizational size, strategic alliance, regulatory compliance). However, legitimacy is different from reputation. Reputation is essentially a generalized expectation on a future behavior or performance of an organization based on a collective perception of its past behaviors or performances (Love and Kraatz, 2009). In other words, organizational reputation is a comparison on a variety of attributes that *could* include the social dimensions assessed in legitimacy (Deephouse and Carter, 2005). By contrast, organizational legitimacy refers to the social acceptance of an organization usually measured using the adoption of codes of conduct, the accreditation from regulatory bodies and the media coverage signaling congruence with social expectations (Vergne, 2011). Vergne (2011) suggests to use four stable measures of legitimacy (environment, competition, accountability and transactions) to empirically distinguish between organization legitimacy and reputation. Similarly, 'organizational legitimacy' is not equal to 'organizational status' as the latter concept refers to the ranking of an organization when compared to other organization. This comparison is based on elements such as desirable organizational traits, conformity and technical efficiency (Deephouse and Suchman, 2008). Deephouse and Suchman (2008) combine the concepts of organizational status, reputation and legitimacy to identify the organizational prestige that denotes the capacity of an organization to achieve its objectives thanks to a favorable social evaluation.

Suchman (1995) elaborated the standard model to evaluate if organizational activities are desirable, proper and appropriate¹⁵. The model identifies three types of legitimacy:

- *pragmatic legitimacy* implies that the most immediate audience of the organization assess its legitimacy following self-utility logics. Therefore, an organization could acquire pragmatic legitimacy simply providing tangible rewards to the audience or appearing responsive to its interests;
- in *moral legitimacy* the evaluator bases his assessment on normative elements, reflecting beliefs about "whether the activity [of the organization] effectively promotes societal welfare, as defined by the audience's socially constructed value system" (Suchman, 1995).

¹⁵ Suchman (1995) based its model on the theoretical insights previously developed by strategic and institutional perspectives. The former perspective emphasizes that organizations instrumentally manipulate and use evocative symbols to obtain societal support, while the latter focuses on the role of structuration dynamics in an organizational sector that originates conformity pressures. These perspectives have proposed alternative classifications based on other legitimacy dimensions (e.g. the distinction between cognitive and sociopolitical legitimacy or the distinction among consent, attitudinal approval and cognitive behaviors to rules). Several authors have proposed extended reviews on the diverse concepts of legitimacy and their classifications over time (Bitektine, 2011; Droege et al., 2011).

Moral legitimacy usually assesses the outputs produced by an organization (consequential legitimacy), the techniques and procedures used (procedural legitimacy), the structures adopted (structural legitimacy) and the organizational leaders (personal legitimacy);

- *cognitive legitimacy* implies that an organization is perceived as necessary (or inevitable) part of a taken-for-granted schema. Cognitive legitimacy is the most powerful source because alternative organizational structures and forms simply become un-thinkable.

On this basis, Suchman (1995) identifies several strategies according to the type of legitimacy an organization desires to acquire, to the duration of the action (i.e. transitory or continual), to the degree of real involvement (i.e. the organization wants to operate in a proper and desirable manner or it simply wants to create the perceptions it is doing so) and to other intended results (i.e. gain, maintain and repair legitimacy). In order to obtain legitimacy, organizations can conform to social expectations, actively manipulate the environment or decouple the organization activity. First, legitimacy could be obtained by strictly adhering to isomorphic requests. Despite it is widely acknowledged that isomorphism leads to legitimacy (Dimaggio and Powell, 1983; Meyer and Rowan, 1977; Meyer and Scott, 1983), this assertion has been empirically tested only in mid-nineties (Deephouse, 1996). Based on an analysis of strategies of commercial banks, Deephouse shows that conforming financial institutions are perceived as more legitimated by regulators and by the general public than those deviating from the 'normal behavior'. Similar studies found that isomorphic behavior has a positive effect on perceived legitimacy (Ruef and Scott, 1998; Westphal et al., 1997). Second, organizations are able to manipulate and somehow control institutional pressures (Boxenbaum and Jonsson, 2008). Following this line of thought, organizations have a pro-active role towards their environment as they are able to strategically modify existing institutions¹⁶ (i.e. agentic perspective). Organizations could decide to satisfy only a minimum level of institutional expectations (compromise strategy), to conceal non conformity by creating a facade or by avoiding external inspections and evaluations (avoidance strategy), to actively resist to institutional pressures by ignoring or even by aggressively denounce them (defiance strategy) and to actively manipulate external sources of institutional requests (manipulation strategy) (Oliver, 1991b). Several empirical studies support the view that legitimacy could be reached using such strategies (Golant and Sillince, 2007; Lounsbury and Glynn, 2001; Suddaby and Greenwood, 2005).

¹⁶ In the 'agentic perspective' institutions are conceptualized as constraints to human behavior (Boxenbaum and Jonsson, 2008). There is no full consensus on this view as the so-called 'non agentic perspective' does not recognize any organization strategic ability. According to this latter line of thought, institutions are social facts that have to be fully internalized by individuals. Therefore, heterogeneous responses emerge simply because individuals are not able to exactly replicate the expected behaviors (Czarniawska and Sevón, 1996; Dacin, 1997; Sahlin and Wedlin, 2008).

Finally, organizations could decide to decouple institutional requests from their day-by-day activities. Decoupling is increasingly seen as a valuable solution for two types of organizational problems: reconciling multiple institutional demands (Battilana and Dorado, 2010; Greenwood et al., 2011; Pache and Santos, 2010; Pache and Santos, 2011) and simultaneously obtain efficiency and legitimacy (Boxenbaum and Jonsson, 2008; Hirsch et al., 2009). Organizations are more likely to decouple practices when exposed to excessive coercive pressures (Kostova and Roth, 2002; Weber et al., 2009; Westphal and Zajac, 2001) or to heterogeneous and conflicting institutional requests (Ruef and Scott, 1998). Similarly, decoupling is a valuable strategy for latecomers in mature organizational fields (Westphal and Zajac, 1994a; Westphal and Zajac, 1997; Westphal and Zajac, 2001). In addition, internal organizational dynamics could have an influence in decoupling decisions. Internal power dynamics, personal interests, ethic request from stakeholders, perceived fiscal and financial benefits are good predictors of decoupling (Fiss and Zajac, 2004; Haveman, 1993; Lounsbury, 2001; Stevens et al., 2005; Westphal and Zajac, 1998; Westphal and Zajac, 2001). It is also increasingly acknowledged that decoupling could refer to policy-practice adoption (i.e. symbolic adoption) or to means-ends implementation (i.e. symbolic implementation) (Bromley et al., 2012a; Bromley and Powell, 2012). Obviously, decoupled activities could change over time (Edelman, 1992) and could lead to substantial changes in organizational structures and action (Hoffman, 1997).

Due to the fact that legitimacy is a generalized perception of appropriateness with a socially constructed system of norms and values, we could image that a legitimated practice has necessarily to be widely diffused (Deephouse and Suchman, 2008). However, we contend this is only half of the story. Individuals could decide to follow contested or even illicit conducts. Similarly, organizations could adopt organizational forms, practices and strategies that are contested or disapproved in the society (e.g. innovations that favor the adopters and damage the society as a whole). These practices are "contested innovations" as the more they diffuse in the society the higher is the risk of social censure and policy intervention (Kennedy, 2012). Contested innovations become illegitimated while they are diffusing. In summary, diffusion and legitimacy are closely related, but in more complex manner than previously thought. It seems to us that scholars are showing a sort of pro-legitimacy bias while think to diffusion. Diffusion increases the legitimacy of a practice only if it is consonant with existing socially constructed systems of norms, values and beliefs. By contrast, diffusion could lead to delegitimation when the spreading increases the awareness in the society that the practice is in contrast with societal norms, values and social expectations.

1.6 Diffusion and institutionalization

Debating the relations existing between diffusion and institutionalization seems to be an easy task. Several organization scholars have highlighted that the institutionalization has to be considered a specific case of a diffusion of an innovation (Jennings and Greenwood, 2003; Powell and DiMaggio, 1991; Zucker, 1987). In particular, Rogers' framework is recalled several times as a valuable model to study how innovations diffuse among members of a social system (Colyvas and Johnson, 2011; Rogers, 2003; Strang and Soule, 1998). However, there is a disappointing tendency to conflate these two concepts as institutionalization is usually measured using diffusion as a proxy (Fligstein, 1985; Schneiberg and Clemens, 2006; Scott, 2001; Tolbert and Zucker, 1983; Westphal and Zajac, 1997). Only recently it has been correctly asserted that diffusion and institutionalization could diverge (Colyvas and Johnson, 2011). We agree with this idea that scholars have oversimplified the relation between diffusion and institutionalization. Therefore, we support this argument through a closer look to the concept of 'institution' and 'institutionalization'.

1.6.1 Institutions

We could start our discussion posing a simple question: *what is an institution?* Such question implies a very complex answer. First, institutions are part of everyday life as they guide individual behavior, define social expectations and enable cooperative human behavior. In doing so, institutions operate at individual level, at organization level, at field level, at State level and even in the whole world. DiMaggio and Powell ironically comment that "sociologist found institutions everywhere, from handshakes to marriages to strategic-planning departments" (DiMaggio and Powell, 1991: 13). Second, it is clearly difficult to present a unique definition of such complex situation. Sociology has developed different definition for institutions based on the specific object of analysis. Therefore, we are not surprised by the fact that the same happens for new institutional research in organizational theory (Czarniawska, 2008; Jepperson, 1991). Since Meyer and Rowan (1977) did not provide any formal definition¹⁷, early new institutional research presented a plethora of definitions and empirical measures of the concept. Due to the fact that most of them were clearly inappropriate, Jepperson (1991) devoted a substantial effort in reviewing past literature and in clarifying what an institution is.

¹⁷ Meyer and Rowan (1977) implicitly suggested that institutions are cognitive structures and institutionalization is the process through which institutions are constructed.

We therefore start our discussion by recalling this funding definition: an institution is a standardized sequence of interaction reproduced over time thanks to relatively self-activating social processes (Jepperson, 1991). In other words, institutions are self-reproducing because they do not need any recurrent collective mobilization supporting and justifying their existence in the society (i.e. individuals do not have to periodically mobilize and intervene to secure the existence of an institution). In this sense, institutions are socially constructed stable, resilient and enduring ways of organizing human activities. Ironically, self reproduction is so important that individuals tend to consider the institutions they know as if they have always been present in the society. This is clearly incorrect as institutions, like individuals, have a life-cycle: institutions born, change, evolve and even disappear over time. As a matter of facts, the self reproduction process is vulnerable to both internal (i.e. collective actions in the society) and external shocks (i.e. environmental shocks). For instance, a change in existing institutions could also be promoted by institutional entrepreneurs (i.e. social actors that desire to change the existing situation) or even by the unintended imperfect imitation of the standardized sequence by individuals. To sum up, an institutions is a "more or less taken-for-granted repetitive social behavior that is underpinned by normative systems and cognitive understandings that give meaning to social exchange and thus enable self-reproducing social order" (Greenwood et al., 2008: 4).

After this brief discussion on what an institution is, now we can turn our attention on how an institutions emerges. On this aspect, new institutional research has a theoretical debt with the arguments developed by Berger and Luckman (1967) in the book *The Social Construction of Reality* (Meyer, 2008). This debt is so strong that Scott has claimed that Zucker, Meyer and Rowan have simply applied these ideas to organizational forms (Scott, 1987). Therefore, we investigate how institutions emerge following the sociology of knowledge approach as developed Berger and Luckman (1967). In extreme synthesis, they assert that individuals and social groups create mental representations of each other's actions. Over time, these concepts become habituated into reciprocal roles played by the actors. Therefore, social reality exist only as a product of an ongoing social interaction through which individuals share knowledge about social reality (Berger and Luckmann, 1967: 54). Berger and Luckmann (1967) identified three phases in the process of construction of social reality:

1. *externalization*: during social interactions symbolic structures are produced by individuals. Then, individuals share the related meanings to other members in the society;
2. *objectivation*: a repeated action is increasingly perceived as objective and external to human activity. The action becomes an "external fact", a part of the "recipe knowledge" constituting social reality;

3. *internalization*: in this phase the objectified reality is actively internalized by an individual thanks to socialization. This internalization transform the objective world into a subjective meaningful perception. In other words, a segment of social knowledge is acquired by an individual to be interpreted in a unique way and to become part of his/her own subjective knowledge.

On this basis, a social interaction becomes an institution through mutual observation and subsequent mutual on how to do things, making the future behavior of each member in the social group predictable. In other words, social interactions imply that individuals act in a given way, interpret the behavior of others and then share their interpretation in an attempt to develop categories of habituated actions (typification). If a behavior is recurrently present in a group (i.e. the action is repeated among the same social actors) and the shared meanings related to reciprocal interactions are made available to the other members of the society, the behavior could be considered institutionalized. In other words, an institution arise when "there is a reciprocal typification of habituated actions by actors" (Berger and Luckmann, 1967: 54). As a result, institutions are cognitive constructions that constitute the "recipe knowledge" and "what everybody knows" that help humans to foresee the future actions of others (Berger and Luckmann, 1967). Renate Mayer (2008) claims that institutions guide the behavior of individuals acting as 'taken-for-granted background programs' capable to frame how individuals perceive the social reality in which they live¹⁸. In summary, we could say that an institution emerges as a process of social construction of reality that guides individual behavior in well-defined social interactions with the aim to reduce uncertainty.

Finally, we turn our discussion to what are the constitutive elements of an institution. Based on DiMaggio and Powell's (1983) theory of isomorphism, Scott devoted a substantial effort in identifying these constitutive elements (Scott, 1995; Scott, 2001; Scott, 2008b). In simple words, Scott asserts that organizational legitimacy is a condition reflecting cultural alignment, normative support or consonance with relevant rules or laws (Scott, 1995). These conditions reflect very different logics to obtain legitimacy: compliance to laws involves the desire to avoid punishment, normative support suggests the existence of a moral obligation to do something, while cultural

¹⁸ "Being a social actor means to know what is expected as appropriate in certain situations. This, in turn, implies a definition of the situation that is compatible with those of others involved and rests on the ability of the actors to take the perspective of the others (significant and generalized others). The focus on the reciprocity of perspectives stresses the necessity of overlapping relevance systems and an intersubjectively shared *Lebenswelt* [i.e. how humans perceive the everyday social world they live in] and, thus, of socialization and internalization. Successful socialization is the basis for the fact-like character of social reality and the degree to which institutions become taken-for-granted backgrounds programs"(Meyer, 2008)

alignment implies following some taken-for-granted behaviors. Despite these differences, organizations follows these logics to obtain legitimacy and, in doing so, they support stable behavior and institutionalized social order (Scott, 2008a). In other words, the logics of action are the three pillars (i.e. the key elements) that support the existence of each institution present in a given society (see table 1).

Table 1 - Three pillars of institutions

Pillar	Regulative Pillar	Normative Pillar	Cultural - Cognitive Pillar
	<i>How things have to be done</i>	<i>How things should be done</i>	<i>How things are done around here</i>
Basis of compliance	Expedience (inducements and/or rewards)	Social obligation	Taken-for-grantedness, shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Control Mechanism	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws and sanctions	Certification and accreditation	Common beliefs, shared logics of actions, isomorphism
Affect	Fear guilt / innocent	Shame / honor	Certainty / confusion
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable and socially supported

Source: (Scott, 2008b)

Regulative pillar emphasizes the rule setting, monitoring and sanctioning activities in social life (e.g. courts applying laws or traditions punishing deviant behaviors). Regulatory authorities and government are examples of actors that have the authority to "establish rules, inspect others' conformity to them and, as necessary, manipulate sanctions - rewards and punishments - in an attempt to influence future behavior" (Scott, 2001). Regulative structures are generally formal and explicit (i.e. they are codified by rules and laws), while sanctions and inducements are the mean through which the will of the powerful actors is imposed. Due to these similarities, Scott aligns regulative pillar with DiMaggio and Powell's (1983) mechanism of coercive isomorphism. By contrast, normative pillar simply defines 'how things should be done' following normative rules that introduce a prescriptive, evaluative and obligatory dimension in individual behavior. While common values and beliefs are usually developed in groups, social classes and religions, normative

rules for organizations comes from profession associations and experts. These actors define standards, values, rules of accreditation followed by organizations desiring to acquire normative legitimacy. Therefore, Scott relates the normative pillar to the normative mechanisms of isomorphism. Finally, cultural cognitive pillar¹⁹ involves the search for legitimacy arising from the adoption of shared categories, common frames of reference and taken-for-granted understandings of a given social situation. Due to the fact that these elements provide useful templates, organizational practices and actions could be adopted because they are comprehensible, recognizable and socially supported. In other words, they are perceived as how things are done. Other comparable organizations (especially perceived successful ones) provide an useful source of legitimated templates of structures and actions. It has been claimed that cultural-cognitive pillar grants the deeper foundations of institutional forms on which belief, actions, norms and rules are constructed (Greenwood et al., 2008).

These three pillars provide the structure of each institution in the society. Admittedly, it is very difficult to empirically distinguish among them as each institutional arrangement simultaneously combines regulative, normative and cognitive processes (Ruef and Scott, 1998; Scott, 1995; Scott et al., 2000). One process may be dominant in a given point of time, but the three pillars usually coexist (Hirsch, 1997). Moreover, the combination of the aspects forming an institution varies over time because regulative elements tend to transmute into normative and then in cultural-cognitive aspects (Scott, 2008a; Scott, 2008c).

We add to the discussion the critiques moved to the previously model in order to understand the key elements forming an institutions (Hirsch, 1997; Phillips and Malhotra, 2008). The central critique claims that the tri-partition does not take into account the ontological differences existing among the three pillars. Normative and regulative aspects are a product of human purposive action (i.e. organizations could contest, resist and deviate from these logics if they perceive them as contrasting their own interest), while the cultural cognitive pillar implies a sort of unreflective action as organizational templates are adopted without the need of any control or sanction. Moreover, organizational scholars have the disappointing tendency to emphasize only one logic of action while explaining institutionalization rather than studying the interplay among them (Scott, 2005). As a result, Phillips and Malhotra (2008) suggest that the regulative and normative pillars identified by Scott (2011) are important pressures in the process of institutionalization rather constitutive elements of an institution. In other words, institutions relies only on cultural-cognitive elements.

¹⁹ In the Scott (1995) this pillar was simply labeled as 'cultural pillar'. The definition of 'cultural cognitive pillar' has been applied in later editions of his framework.

1.6.2 Institutionalization

Institutionalization reflects the degree to which a social practice resembles an institution (Colyvas and Johnson, 2011; Palmer et al., 2008). This means that a practice is increasingly integrated into the social order thanks to its ability to be self-reproduced, without recurring social mobilization²⁰. Jepperson (1991) claims that institutionalization simply means that the ongoing reproductive process granting survival of an institution is actively contrasting non-conforming actions. Following this line of reasoning, we could say that the degree of institutionalization is strongly connected with the vulnerability of the underlying institution: high levels of institutionalization means that the reproductive process could be challenged only by strong environmental shocks or by decisive collective actions. Institutions present for a long time in the society, linked to exogenous constraints (e.g. moral authority or laws of nature) or considered fundamental for the functioning of the society tend to display low vulnerability.

Only recently the cognitive mechanisms underlying the process of institutionalization have been investigated (Colyvas and Powell, 2006). In their discussion on the institutionalization of technology-transfer practices in Stanford University, Colyvas and Powell (2006) argue that institutionalization is driven by self-heightened legitimacy and enhanced taken-for-grantedness. Legitimacy measures the shared consensus on a practice (i.e. how the practice is considered proper, desirable and appropriate with the socially constructed norms, values and beliefs)²¹. Taken-for-grantedness measures the degree of transformation allowed to a practice while it is repeated by individuals. This immutability and un-questionability emerges due to the fact that individuals share pre-existing templates for thought and action (i.e. perceptions or conventions of 'how things are' and 'how things should to be done'). The more these perceptions are considered immutable and shared, the lower is the risk of change when the practice is reproduced over time. In summary, high levels of legitimacy (consensus on a practice) and high levels of taken-for-grantedness (low possibilities for change or questioning) lead to institutionalization. Clearly, legitimacy and taken-for-grantedness do not always operate in parallel (e.g. bribes are partially institutionalized because they have low legitimacy, but high levels of taken-for grantedness) and they could present different degrees

²⁰ We are not saying that social mobilization is negative for institutionalization as it sometimes provides support to the existing institutions and social order (Schneiberg and Lounsbury, 2008).

²¹ As previously discussed, legitimacy is not self-sufficient to grant institutionalization. For instance, managerial fads widely diffuse in an organizational field because they are presented as legitimated practices by experts and consultants, but they are soon abandoned as new alternatives become available. These practices are not institutionalized as they do not develop the self-reproducing ability of institutions.

overtime (low, medium and high states). In summary, institutionalization is a process based on self-reinforcing mechanisms of legitimacy and taken-for-grantedness²².

Following the idea that institutionalization operates at different levels of analysis (i.e. organization, organizational field or whole society), new institutional scholars have displayed a tendency to elaborate two slightly different ways of thinking at institutionalization: a micro-level perspective and macro-level perspective²³ (Scott, 1987; Zucker, 1987). The main features of these two perspectives can be summarized as follows:

- the micro-level perspective is based on the seminal discussion on the role of institutionalization in cultural persistence (Zucker, 1977) and on the cognitive processes involved in the creation and transmission of institutions (Tolbert and Zucker, 1983; Zucker, 1987). According to this view, individuals have a central role in transmitting what is social reality. Institutional elements are transmitted to new-comers that perceive these elements as taken-for-granted. In particular, the more individuals perceive an act as objective and exterior, the more it is perceived as a taken-for-granted part of social reality. Therefore, institutionalization is "the process by which individual actors transmit what is socially defined as real and at the same time, at any point of the process the meaning of the act can be defined as less or more taken for granted part of the social reality" (Zucker, 1977);
- the macro-level perspective originates from the idea that organizations conform to institutionalized rational myths simply because they are rewarded (Meyer and Rowan, 1977). As a result, organizations tend to conform to these requests to obtain legitimacy (or other valuable resources) rather than because they perceive these requests as taken-for-granted. While micro-level perspective focuses on cognitive measures and deeply investigate the role of language and symbols in explaining institutionalization, in macro-level approach institutionalization is assumed because the object of study is the resulting levels of homogeneity in a field.

Despite the fact that cognitive aspects could help to explain higher order institutionalization, these two theoretical perspectives have been developed in parallel for a long period of time. Only recently new institutional scholars have begun to investigate the interplay between them as a mean to explain

²² We have briefly discussed the *process of institutionalization*. Colyvas and Powell (2006) claims that the institutionalization of a practice is, at the same time, *an outcome*. The more organizational practices are understood as embedded in routines and unquestioned logics of action, the more they are institutionalized. In this sense, institutionalization emerges bottom-up (from organization to field) and it is consolidated top-down (from the field to the organization).

²³ In 1987 Zucker labeled the macro-level approach as 'environment as institution' and the micro-level approach as 'organization as institution' (Zucker, 1987).

institutional change. While past research in institutional change was triggered only by the action of institutional entrepreneurs (Battilana et al., 2009; Hwang and Colyvas, 2011; Lawrence and Suddaby, 2006), now it is increasingly acknowledged that it is only part of the story²⁴. Institutional change could emerge because everyday organizational activities deviating from the norm become institutionalized and then spread in the field (Smets et al., 2012). Moreover, inter-organizational collaborative relations could create 'proto-institutions' (i.e. organizational practices that become institutionalized within the specific context of collaboration) that are still poorly diffused but have the potentiality to become institutionalized (Lawrence et al., 2002). Colyvas and Maroulis suggest the presence of another type on institutionalization process defined as 'emergence-based institutionalization'. In this kind of processes local practices (i.e. poorly diffused practices in an organizational field) could become preponderant field-level institutions thanks to micro level relations independent from field-level coordination (Colyvas and Maroulis, Forthcoming).

After this brief analysis, we now can investigate the relations between diffusion and institutionalization. We start our discussion by asserting that institutionalization and diffusion have two different analytical focuses. Diffusion investigates how things spread in a societal system taking into account individual, relational, cultural and structural factors capable to influence the speed and the rate of adoption (Rogers, 2003). Therefore, the theoretical focus is on the mechanisms and on the patterns of spreading. By contrast, institutionalization investigates legitimacy and taken-for-grantedness to understand how things become self-reproducing. In order to become an institution a new practice (or structure) need to be strongly and durably integrated into sources capable to grant its reproduction (e.g. the law, the professions, social shared identity categories, taken-for-granted aspects of everyday life). The degree of integration depends on the number of connections with these sources of reproduction, on the organizational routines in which the practice is integrated and on the associated cultural values in which the institution is embedded (Colyvas and Johnson, 2011). On this basis, we could assert that institutionalization and diffusion are two distinct concepts. The great majority of organizational studies have measured institutionalization of a practice by measuring its overall diffusion (e.g. (Fligstein, 1985; Tolbert and Zucker, 1983; Westphal and Zajac, 1997). This is not always true as a widely-diffused practice does not automatically mean that it has been related to cultural-cognitive elements and other social processes capable to grant its self-reproduction. Colyvas and Johnson (2011) have developed a 2x2 matrix to identify all the possible

²⁴ Research on institutional change has also obtained an increased attention by the institutional logic perspective (Thornton and Ocasio, 2008). While this perspective emerged from new institutional research, it is now considered an autonomous theory. Thornton and Ocasio devoted a substantial effort to develop arguments that support the idea that institutional logics is a distinct approach from new institutionalism (Sarma, 2013; Thornton et al., 2012).

situations that researchers could find while combining diffusion and institutionalization (see figure 1).

Figure 1- Diffusion and institutionalization

Table 1. Matrix Comparing Diffusion and Institutionalization

		Institutionalization	
		No	Yes
Diffusion	Yes	Ubiquitous but not accepted	Widespread, conventional, appropriate
	No	Uncommon and inappropriate	Accepted, but not prevalent

Source: (Colyvas and Johnson, 2011)

The table clearly highlights that diffusion and institutionalization do not always move in the same direction. Practices could be considered inappropriate and uncommon. Certain practices are widely diffused even though they are illegitimate (e.g. black economy), whereas others are considered fully legitimated even though they are not prevalent in the society (e.g. a minimum number of woman in the board of directors of Italian listed companies). Finally, other practices are neither diffused nor institutionalized. We have found a surprising research gap as new institutional research until now is essentially dealing with cases of successful diffusion and institutionalization.

Finally, we highlight that, if properly done, studying diffusion and institutionalization is not a mutually exclusive task. In other words, organizational scholars could study both institutionalization, diffusion and the reciprocal effects among them using appropriate measures. We expect that, in some cases, diffusion of an innovation is a prerequisite for its institutionalization. Diffusion could lead to a consecutive process of institutional change emerging from the development of cultural cognitive foundations that justify the persistence of an innovation in the social system. However, we contend that this sequence is not always valid. It appears reasonable to image that, in some cases, diffusion and institutionalization are mutually reinforcing. Let's think about a practice that is diffusing and it is increasing its legitimacy while spreading. Under these assumptions, the more the practice is diffusing the more it becomes legitimated in an organizational field. Thus, non-adopters could decide to increase their legitimacy by adopting the practice. In this sense, there is a reinforcing effect between diffusion and institutionalization. We support this arguments thanks to the recent theoretical tools elaborated to empirically measure institutionalization. For instance, it has been argued that the degree of institutionalization could be measured assessing the change in law, norms, collective beliefs and other cognitive elements (Boxenbaum and Jonsson, 2008). It has been also suggested to measure institutionalization by

combining the percentage of adopters with the numbers of rhetorical justifications used by adopters²⁵ (Green, 2004). Finally, it has been claimed that the rate of adoptions is influenced by the type of justification used (pathos, logos, ethos) used to support the decision to adopt a given practice (Brown et al., 2012; Green and Yuan, 2011; Green et al., 2009; Suddaby and Greenwood, 2005).

1.7 Conclusion

In this chapter we have reviewed the ongoing debate in new institutional research involving diffusion arguments. Two main theoretical debates seems to emerge. In the first debate, scholars are discussing on *what factors* enable diffusion in a social system. While a first group of scholars claims that diffusion is essentially driven by the characteristic of the innovation, a second group is fascinated by the possibility to explore social mechanisms of diffusion. By contrast, the second debate is focused on developing a model that links the *motivations of adoption* with a phase of diffusion. Rather than focusing on the factors that enable diffusion, in this theoretical discussions scholars are more interested in how motivations of adoption change over time. We have highlighted that scholars are increasingly trying to refine the two-stages model of diffusion elaborated by Tolbert and Zucker (1983). While this model is intuitive and theoretically appealing, it also bears some strong assumptions on human behavior that poorly fit with the complexity of adoption-decisions. Therefore, several contributions are trying to refine this model of diffusion (David and Strang, 2006; Denrell and Kovacs, 2008; Jonsson et al., 2009; Kennedy and Fiss, 2006; Kennedy and Fiss, 2009).

While this debate offers an exciting possibility to extend our knowledge on how things diffuse, this possibility has to be carefully exploited as new institutional arguments could be easily conflated and misinterpreted. Therefore, we have analyzed how the concept of diffusion is related with the other conceptual cornerstones of the theory: isomorphism, legitimacy and institutionalization. The main findings are that scholars have displayed a disappointing tendency to conflate institutional isomorphism with diffusion. In order to avoid such confusion, we have highlighted that diffusion simply signals a process of institutional isomorphism (i.e. a practice could be adopted only for efficiency reasons). Moreover, while isomorphism is an attribute of an organizational field, diffusion is an attribute of a given organizational practice or structure. The more an organizational field matures, the clearer it becomes the set of legitimated practices from which an organization in the field could choose. Therefore, it is fully understandable that equally legitimized practices could

²⁵ In other words, taken-for-grantedness of a practice is positively related with the number of adopters and negatively related with the number of justifications.

be more or less diffused in a polymorphic organizational field. Similarly, scholars usually use the diffusion of a practice as a proxy for its institutionalization. We have elucidated that diffusion investigates how things spread in a societal system taking into account individual, relational, cultural and structural factors capable to influence the speed and the rate of adoption. By contrast, institutionalization investigates how things become self-reproducing in the society focusing on its legitimacy and taken-for-grantedness. Therefore, it is not always true that widespread practices have developed resilient cultural-cognitive foundations, i.e. diffusion and institutionalization do not always move in the same direction. For instance, a practice could be accepted and not prevalent in the society. On this basis, we warn to carefully evaluate the reciprocal effects between institutionalization and diffusion. Finally, we have elucidated that scholars display a sort of cognitive bias in equating diffused practices with legitimated ones. Diffusion increases the legitimacy of a practice only if it is consonant with existing socially constructed systems of norms, values and beliefs. By contrast, diffusion could lead to delegitimation when the spreading increases the awareness in the society that the practice is in contrast with societal norms and values. To sum up, it seems to us that diffusion display a web of complex relations with institutionalization, isomorphism and legitimacy that have to be carefully taken into account while refining the adoption-motivations debate.

Chapter 2

MOTIVATIONS AND PERCEPTIONS IN INNOVATION ADOPTION DECISIONS: A FRAMING PERSPECTIVE

In this chapter we critically review Kennedy and Fiss (2009), one of the most promising contributions in the debate on the motivations of adoption. We also contend that Roger's diffusion of innovation theory could help in extending our knowledge in how perceptions influence these decisions. We first critically review the theoretical framework, the methodology, the data used by Kennedy and Fiss (2009) to demonstrate that both early and late adopters simultaneously use economic and social expectations in their adoption decisions (section 2.2). We then highlight those points that, in our view, appear to be theoretical weaknesses in the contribution. On this basis, we contend that Rogers' diffusion of innovation theory (Rogers, 1962; Rogers, 2003) is a useful theoretical tool to overcome some of these limits (section 2.3). Then, we present an in depth review of Rogers' framework (section 2.4) and we define some propositions on how the perceived attributes of an innovation could help in refining the framing perspective (section 2.5).

2.1 Introduction

In the previous chapter we have claimed that one of the most promising lines of research in new institutionalism is the debate on the 'motivations of adoption'. To briefly recall this debate, we say that traditional studies strictly follow the two-stages model of diffusion elaborated in Tolbert and Zucker (1983). This model claims that early adopters seek the practice's potential benefits (technical or economic), while late adopters are more interested in the legitimacy they could gain by conforming to social expectations. Following this line of reasoning, the importance of technical motivations of adoption will decline over time as they are increasingly substituted by legitimacy-seeking motivations. As a result, institutional motivations of adoption are clearly present only in later phases of diffusion (Baron et al., 1986; Fligstein, 1985; Fligstein, 1987; Haveman, 1993; Tolbert and Zucker, 1983; Westphal et al., 1997; Zajac and Westphal, 2004). Only recently a small, but growing number of contributions have tried to refine the idea that efficiency and social motivations of adoption are connected to a well-defined phase of diffusion (David and Strang, 2006; Denrell and Kovacs, 2008; Jonsson et al., 2009; Kennedy and Fiss, 2006; Kennedy and Fiss, 2009).

We want to contribute to this body of literature by focusing on one of its most innovative contributions: "*Institutionalization, framing and diffusion: the logic of TQM adoption and implementation decisions among US hospitals*" published in 2009 in the *Strategic Management Journal* by M. T. Kennedy and by P. C. Fiss (Kennedy and Fiss, 2009). We consider this study as highly innovative for several reasons. First, the study claims that the substitution effect poorly fits with real world as both early and late adopters seek legitimacy and efficiency at the same time. Second, it is the first contribution in which adoption motivations are directly asked to decision makers rather than inferred using indirect measures. Third, the contribution adopts a framing

perspective to explain whether and when organizations adopt diffusing innovations (Dutton and Jackson, 1987; George et al., 2006; Staw et al., 1981). Kennedy and Fiss basically claim that early adopters interpret adoption as a potential opportunity, while late adopters are more likely to frame it as a threat. Finally, the framing perspective can fruitfully contribute to the growing number of studies investigating why organizational practices are sometimes only partially implemented (Edelman, 1992; Fiss and Zajac, 2004; Fiss and Zajac, 2006; Westphal and Zajac, 2001). Despite its innovativeness, these theoretical insights are poorly followed. As far as we know, the call raised by Kennedy and Fiss (2009) to expand, verify and refine their ideas has not been answered yet. We want to try to answer to this call. In doing so, we first review their contribution (section 2.2) and then we shed light on those that, in our view, appear to be some of its weaknesses (section 2.3). We then present an in-depth review of Rogers' diffusion of innovation theory (section 2.4). Finally, we discuss how this framework could help to refine the theoretical insights contained in Kennedy and Fiss (2009) (section 2.5).

2.2 Institutionalization, framing and diffusion: the logic of TQM adoption and implementation decisions among US hospitals

As previously discussed, the basic idea of Kennedy and Fiss (2009) is to refine the two-stages model developed by Tolbert and Zucker (1983). In their seminal contribution, Tolbert and Zucker basically claimed that early adopters are interested in the technical and economic advantage that a practice could provide. By contrast, late adopters are more interested to appear legitimated due to the fact that in latter phases of diffusion a practice is increasingly institutionalized. Kennedy and Fiss (2009) provocatively argued that organizations are simultaneously interested to "look good" (i.e. to obtain social gains) and to "do better" (i.e. to pursue genuine performance improvements). In other words, in every stage of diffusion potential adopters simultaneously follow time logics of efficiency and of social expectation. We could say that this critique to the two-stages model was not entirely new for several reasons. First, the substitution effect between efficiency and legitimacy was never directly tested. This shortcoming originated from the fact that legitimacy motivations were inferred from other characteristics (Baron et al., 1986; Tolbert and Zucker, 1983; Westphal et al., 1997). For instance, Tolbert and Zuckert (1983) used the characteristic of adopters (e.g. municipality status, age and size) to explain variations in the motivations for adoption. Similarly, Westphal and colleagues (1997) assumed that the gradual decrease in TQM customization was signaling a reduction in the search of efficiency paralleled by an increase in the search for legitimacy. Second, the empirical evidence was puzzling as several studies clearly did not support the idea that motivations of adoption strictly follow two stages (e.g. (Burns and Wholey, 1993;

Goodstein, 1994; Kraatz and Zajac, 1996; Sherer and Lee, 2002). On this basis, Kennedy and Fiss (2009) relate the motivations to how organizational decision makers interpret (i.e. frame) adoption decision. The intuition is that the adoption of a practice implying some form of organizational change (e.g. an innovative technology, a new administrative practice, a new form of strategic alliances) could be framed either as a threat or an opportunity. Early adopters are more likely to be excited by the potential advantages the innovation could grant. These potential gains could be both economic (e.g. performance improvements originated from the fact that few organizations have adopted the innovation) and social (e.g. possibility to be perceived as a market leader). Obviously, these potential gains bear some risks because not all innovations always lead to the expected results. For late adopters it is a completely different story. Over time, the diffusion of highly effective innovations increases competitive pressures and, if the innovation is increasingly institutionalized (i.e. it is perceived as 'the solution' to a particular problem), late adopters have the risk to appear illegitimate. Therefore, later adopters are more likely to perceive the situation as a threat rather than an opportunity. Simply speaking, they are going to adopt the innovation to avoid potential social and economic losses. Kennedy and Fiss go a step further in the analysis as they contend that framing has also an impact on implementation decisions. If the innovation is adopted to achieve social and economic gains, decision makers display a greater commitment in the implementation of the practice. By contrast, if decision makers only desire to avoid a legitimacy threat they're probably less interested in implementing it. Now we turn to a more fine grained discussion on the theoretical framework, on the methodology and on the results emerging from the analysis. We'll discuss these elements separately. We know that this section could appear a mere synthetic description, but in our opinion it is a necessary step to understand the limits of the contribution.

2.2.1 Theoretical framework

The idea to include cognitions in new institutional research is not new. The study of micro foundations of institutional theory dated back to the seventies (Zucker, 1977; Zucker, 1987). However, the tendency to focus on macro-level institutional phenomena has raised several calls to better understand the micro foundations of new institutionalism (Dimaggio, 1997; Dimaggio and Powell, 1991; Powell and Colyvas, 2008; Scott, 2001). Following these calls, Kennedy and Fiss (2009) propose to abandon the focus on the social and economic outcomes typical of the two-stages model in favor of the perceptions of the potential gains and losses that the adoption of a diffusing innovation could generate. This is possible thanks the use of the 'framing perspective'. It's difficult to present a synthesis of this perspective as it has been applied in a wide range of research fields (such as sociology, psychology, communication studies, mass media, political sciences and

economics) and each of them has elaborated its own definition of framing effects²⁶ (Levin et al., 1998). A full review of framing perspective is clearly beyond the scope of our analysis. We therefore say that, similarly to psychology and economics, organization studies conceptualize framing as a process by which individuals understand events following templates present in their memory. While facing an event, individuals compare the characteristics of the event with the cognitive representations of similar events already known. Therefore, individual decisions in the same situation could differ due to the frame used to decode a certain event.

Framing perspective has recently been applied in institutional research to understand how cognition could influence the persistence (or change) of institutions²⁷ (Fiss and Zajac, 2006; George et al., 2006; Kennedy and Fiss, 2009). This line of research relies on the idea that 'opportunity' and 'threat' are the most commonly frames to understand an environmental change (Dutton and Jackson, 1987; Jackson and Dutton, 1988). In their seminal contribution on strategic interpretation Dutton and Jackson (1987) defined a threat as “*negative* situation in which *loss* is likely and over which one has relatively *little control*” and an opportunity as “*positive* situation in which *gain* is likely and over which one has a fair amount of *control*” (Dutton and Jackson, 1987: 80). We have maintained the original emphasis in order to highlight that both threats and opportunities are characterized by three dimensions: a perception of the situation (negative or positive), a potential result (loss or gain) and a potential control over the situation (little or fair control). Several empirical contributions have simplified Dutton and Jackson's initial definitions by demonstrating that positive and negative perceptions are not needed to qualify situations as threats or opportunities (Chattopadhyay et al., 2001; Thomas et al., 1993; Thomas and Mcdaniel, 1990). Therefore, opportunities (threats) are defined based on the potential gains (losses) and a sufficient (limited) sense of control. What matter the most is that framing an issue as a threat or an opportunity directly influence the choices and the actions of decision makers (Dutton and Jackson, 1987; Thomas et al., 1993; Thomas and Mcdaniel, 1990).

Scholars have developed two perspectives predicting organizational responses to threats and opportunities: 'threat rigidity hypothesis' and 'prospect theory'. According to the former perspective, an individual facing a threat realize that he has a little control over the situation and he is facing the concrete risk to obtain a negative result. In order to reduce these unpleasant feelings, the individual

²⁶ For instance, framing in communication studies refers to the ability of mass media to influence public opinion by selecting particular words and phrases (i.e. words that overemphasize positive or negative aspects of an event). Sociology explain the success of social movements by their ability to frame the public discourse to support their ideas.

²⁷ We want to point out that this is not the only application in new institutional research. Frames are useful mental models used to interpret situations and enabling the process of sense making (e.g. (Weick, 1995; Weick et al., 2005)). Frames are also used to explain the institutional change following the social movement theory to understand their effects in aligning the activities and goals of individual and in affecting the interpretation of events of the external audience (e.g. (Benford and Snow, 2000; Snow et al., 1986)).

is more likely to stick to well known and established patterns of behavior rather than to experiment new ones (Staw et al., 1981). We could say that individuals fight against uncertainty and perceived uncontrollable situations by repeating the routines learned in the past in order to try to restore control or to reduce the potential negative results. This could result in an increased attention on internal efficiency matters, on cost reduction and on avoiding actions directed to the external environment (Dutton and Jackson, 1987; Staw et al., 1981; Thomas et al., 1993). If a situation is perceived as an opportunity, decision makers are more likely to explore new patterns and to be involved in actions directed to external environment thanks the confidence in their ability to control the situation (Jackson and Dutton, 1988; March and Shapira, 1987; Thomas et al., 1993). By contrast, prospect theory claims that the potential gains and losses are only part of the story as decisions are influenced by the more or less favorable conditions in which they are taken (Kahneman and Tversky, 1979). Individuals tend to become risk adverse in favorable conditions because they do not want to lose what they have previously gained (i.e. individuals tend to overweight the probability of an incoming loss capable to reduce the accumulated benefits). By contrast, not favorable conditions are more likely to stimulate risk-seeking behaviors because individuals overweight the possibility to obtain a future gain capable to reduce (or even to reset) the losses they are facing when the decision is taken (Kahneman and Tversky, 1979; Levin et al., 1998; Tversky and Kahneman, 1981). In other words, the situation acts as a reference point in the mind of individuals making them risk-adverse in the domain of gains and risk-lovers in the domain of losses. In order to empirically verify these statements, prospect theory clearly defines the alternative outcomes and the probability distribution related to these outcomes. By translating these arguments in organizational theory, decision makers facing a threat are more likely to consider alternative solutions that otherwise could appear too risky, while organizations facing an opportunity are more likely to follow the existing routines and behaviors (Daft and Weick, 1984; Figenbaum and Thomas, 1988; Greve, 1998; Wiseman and Gomez-Mejia, 1998).

We could say that, due to these opposite predictions, it is not surprising that these two bodies of knowledge were developed independently for a long time. Chattopadhyay and colleagues integrate these two theories by claiming that the influence of a perceived environmental threat on organizational actions is moderated by the organizational strategy and the lack of resources (Chattopadhyay et al., 2001). They demonstrate that organizational action is influenced by the interpretation of a situation as a threat showing "that control-reducing threats lead to more conservative internally directed actions and that likely losses lead to riskier externally directed

actions" (Chattopadhyay et al., 2001: 949)²⁸. In other words, prospect theory is a good predictor if the environmental threat is perceived as a potential loss of tangible resources coming from well-identifiable alternatives, while threat rigidity hypothesis is a predictor if the threat is perceived as a loss of control that lead to unpredictable results.

These arguments are easily applied to environmental pressures that could influence the legitimacy of organizations (George et al., 2006). Organizational decision makers could perceive these pressures as potential gains (or losses) of either resources or control over the environment. On this basis, they could decide to strictly follow legitimated actions by adopting structures, practice and rhetoric already present in the institutional environment (i.e. isomorphic actions) or to initiate actions departing from these widely accepted patterns of behavior (i.e. non isomorphic actions). This latter decision challenges the legitimacy of established organizational practices and structures leading to a potential institutional change. Following prospect theory, George and colleagues (2006) assert that environmental pressures resulting in a potential legitimacy-related loss of resources will stimulate non-isomorphic actions, while potential legitimacy-related gains of resources are more likely to favor isomorphic actions. We could simply say that conformity emerges if decision makers perceive isomorphism as a good strategy to access to valuable tangible resources, while they'll go for more risky actions (i.e. actions not legitimated) to reduce the potential loss of resources. By contrast, environmental pressures influencing organizational control are predicted by the threat rigidity hypothesis. Therefore the potential legitimacy-related loss of control will lead to isomorphic actions, while the potential legitimacy-related gain of control will lead to non isomorphic activities.

2.2.2 Data and methodology

In order to test their ideas Kennedy and Fiss (2009) use the data provided by the National Survey of Hospital's Efforts to Improve Quality carried out by the American Hospital Association in 1993. The database contains the answers of more than 3.300 hospital top managers²⁹ on the initiatives adopted to improve the quality of patient care, on the structural information of the hospital (i.e. number of employees, number of beds), on some strategic decision of the hospital (i.e. being a teaching hospital, being involved in alliance with other hospitals) and on the degree of competition in the area. The richness of this database has inspired one of the most cited studies on diffusion in

²⁸ Chattopadhyay and colleagues do not find a corresponding support for a situation framed as an opportunity. They state that "study did not show corresponding effects for the control-enhancing and likely gain dimensions of opportunity. Perhaps organizational responses to opportunities are driven more by the unique features of the new ideas and technologies (Nutt, 1984) that enable organizations to exploit new situations (Jackson & Dutton, 1988)" (Chattopadhyay et al., 2001: 949).

²⁹ It is important to note that the National Quality Survey was sent to the total of 5492 community general medical surgical hospitals operating in the US. Therefore, the respondents roughly the 60% of the entire population.

new institutional research: the Westphal and colleagues (1997) research on the adoption of Total Quality Management practices among US hospitals in early nineties. This study applies the typical two-stages model of diffusion developed by Tolber and Zucker (1983). Data shows that later adopters tend to customize less TQM tools and that they display lower performance benefits if compared to early adopters. According to Westphal and colleagues, this is a clear signal that late adopters are less interested in potential economic benefits as their main concern is not to appear illegitimate on the eyes of their constituencies³⁰.

In their analysis Kennedy and Fiss (2009) use ordinary least square regressions (OLS) to estimate the relations between the stage of adoption, the motivations of adoption (both social and economic) and the actual implementation. The dependent variants are, obviously, the motivations that have driven the adoption decision and the extent to which TQM practices have been implemented. Economic and social gains have been assessed using the data collected with the questionnaire sent to hospital CEOs in 1993. By contrast, the actual implementation of TQM has been measured using ad hoc survey sent to the hospital directors asking them to evaluate the use of TQM tools by the end of 1992. The dependent variables are essentially two: the stage of adoption and the actual implementation of these practices. In the former case, following the previous study of Westphal and colleagues (1997), the stage of adoption is determined by creating three classes: very early adopters (i.e. hospitals that have adopted TQM between 1985 and 1988), early adopters (i.e. hospital that have adopted TQM between 1989 and 1990) and later adopters (i.e. hospitals that have adopted TQM between 1991 and 1993). Similarly, they perform an alternative analysis dividing early and late adopters at the midpoint of the observed period, with no substantial changes in the results. In the latter case, implementation is measured using the result of the *ad hoc* survey.

We could summarize the main findings on the research as follows:

- the analysis supports the idea that social and economic motives do not mutually exclude during diffusion. Simply speaking, economic and social motives are complementary in the decision to adopt a diffusing practice;
- the hypothesis that early adopters are motivated by the perceived opportunity to obtain economic gains³¹ is not supported (i.e. there is no statistically significant difference in expected economic gains by early and late adopters). In other words, "the findings of this study suggest that early adopters are no more motivated to achieve economic gains than later

³⁰ Simply speaking, I don't need to spend too much energies and efforts in customizing TQM to fit with the hospital characteristics if I'm adopting TQM practices only for conformity reasons.

³¹ Economic gains are related to the improvement in improvements in organizational performance and internal functioning (i.e. improvements in the technical care of the provided services, improvements in productivity, improvements in service quality, improvements in patient satisfaction). Economic losses are assessed using competitive disadvantages such as loss in market share and increase competition with other hospitals.

ones; or, to put it the other way around, later adopters are no less motivated to achieve economic gains than are early ones" (Kennedy and Fiss, 2009: 912). By contrast, economic losses appear to be much more period dependent than economic gains as the hypothesis that late adopters adopt TQM for the perceived threat of incurring in economic losses is fully supported;

- the hypothesis that early adopters choose TQM to obtain social gains³² and late adopters to avoid perceived social losses (i.e. they don't want to appear illegitimate) are fully supported;
- the hypothesis connecting motivations to extensive implementation have both strong support. In other words, the desire of early adopters to achieve social and economic gains lead to extensive implementation of TQM practices, while the desire to avoid social and economic losses lead to lower levels of implementation.

Despite the breakthrough in the theory produced by these results, in our view the contribution presents a number of limits that have to be carefully taken into account. The following section is devoted to analyze these critical points.

2.3 A critical review of Kennedy and Fiss (2009)

In our opinion three critical points seem to emerge in the contribution: the use of the concept of institutionalization, the legitimacy of TQM practice in the public sector in early nineties and the relations between timing and the motivations of adoption. We'll discuss these points separately. In doing so, we want to clarify that we recognize the unquestionable value of the theoretical insights of Kenney and Fiss (2009). We know we are writing on the shoulders of giants. However, this critical review helps us to understand how we can help to extend the existing knowledge in the debate on adoption motivations.

The first critical point relies on the supposed institutionalization of the TQM practice in the public sector. Several scholars consider institutionalization as a specific case of a generic process of innovation (Jennings and Greenwood, 2003; Powell and Dimaggio, 1991; Rogers, 2003; Zucker, 1987). Therefore, institutionalization has an intimate connection with the diffusion of an innovation and that's why scholars tend to conflate them. However, the two concepts are clearly distinct because 'institutionalization' refers to how things become permanent in the society (i.e. how things become a resilient part of social reality), while 'diffusion' refers to how thing spread in the society (Colyvas and Johnson, 2011). Therefore, we could say that a wide diffusion does not automatically

³² Social gains are operationalized as the possibility to be perceived as a market leader among American surgical hospitals, while social losses are measured as the pressures to implement TQM practices coming from regulatory agencies.

mean that the practice is institutionalized. A practice could be considered institutionalized only if it develops cultural cognitive foundations that enable it to persist (i.e. it becomes taken-for-granted) (Colyvas and Johnson, 2011). Recent studies have highlighted that the degree of institutionalization could be empirically assessed by evaluating the change in norms and collective beliefs (Boxenbaum and Jonsson, 2008) or by combining the percentage of adopters with the evolution in the rhetorical justifications used by adopters (Green, 2004). In their survey Kennedy and Fiss did not ask any specific question aiming at assessing the degree of institutionalization of TQM practices among the directors of US surgical hospitals. Following a great number studies in new institutional research (e.g. (Fligstein, 1985; Tolbert and Zucker, 1983; Westphal and Zajac, 1997), they assume that widespread diffusion equals to institutionalization. As we have discussed in the previous chapter, this is not always true. Moreover, managerial fads and management fashion setters could also explain *why* a practice is adopted, but these forms of social reproduction are considered weaker if compared to institutionalization. Admittedly, fads also produce a two-stages in which early and late adopters are motivated by *managerial perceptions* of the competitive risk of non-adoption rather than by the search of legitimacy or efficiency (Abrahamson and Rosenkopf, 1993). In addition, sometimes once-fashionable managerial practices could become permanent and stable institutions, but they are the exceptions rather than the rule (Abrahamson, 1991). Despite these facts, the nature of managerial fads and fashions do not allow them to be considered part of an institutionalization process as they never become self-reproducing (Abrahamson and Fairchild, 1999; Colyvas and Johnson, 2011; Schneiberg and Clemens, 2006). On this basis, we contend that Kennedy and Fiss (2009) do not really assess institutionalization as they do not empirically demonstrate that it has an influence on adoption motivations (as claimed in the title of the article). Institutionalization always remains in the background in the theoretical and empirical development of the paper. In our opinion, this limit does not reduce the value of the contribution which focuses on the variation in the motivations of adoption during diffusion.

A second critical point lies in the fact that, in the early nineties, TQM was an administrative innovation for the public sector, but it was already well established and legitimated in the private sector. In their article Kennedy and Fiss (2009) explain this passage while stating:

"By the time TQM practices began to diffuse among U.S. hospitals in the late 1980s, the idea of TQM as a quality enhancement tool was already well established. As TQM was gaining acceptance in other business sectors, applying such quality management tools to the health care sector became attractive to early adopters interested in distinguishing themselves from their competition" (Kennedy and Fiss, 2009: 902)

We contend that American hospitals that adopted TQM in early nineties were not innovators in absolute terms. By the time it was adopted in the public sector, TQM was already perceived as an appropriate solution to improve quality of the services in both private and public sector

organizations. Decision makers that pioneered the decision to introduce TQM in their hospital were conscious that these practices had already proven to be effective in improving quality in private sector. Therefore, the possibility to be perceived as an innovative high-quality hospital by external adopters was extremely high. We remember that the 'social gains' in Kennedy and Fiss (2009) were measured using the possibility to be perceived as market leaders. In our opinion, this could also explain why data support the idea that early adopters are influenced by the concrete opportunity to increase their status among US surgical hospitals, especially if we consider that American hospital industry is highly regulated. Kennedy and Fiss correctly argued that it could make poor sense to evaluate this perception if compared to more competitive industries (Kennedy and Fiss, 2009: 914). However, this is the only measure of social gain available in the National Survey and they demonstrate that it is a good proxy to evaluate the search of social approval in the minds of hospital CEOs. Admittedly, Kennedy and Fiss (2009) recognize that an innovation has to be perceived as valuable for both adopters and non-adopters to generate some social gains. Clearly, this is not true for innovations without an established legitimacy in the social system. The authors refer to the literature stating that early adopters of 'true innovations' need to create reference points (or relate the innovation to existing reference points) to justify their adoption and to create the idea that the innovation is valuable (Fiss and Zajac, 2006; Hargadon and Douglas, 2001; Strang and Meyer, 1993). However, they do not provide any explanation of how the adoption of a true innovation has an influence (if any) on the assert that early adopters search both economic and legitimacy gains. They simply say that TQM adoption by American hospitals in early nineties is a case of a diffusing innovation that have social significance for both adopters and observers, due to its clear connection with the existing technologies and institutional regimes.

Finally, the last critical point emerges from the claimed relation between timing (i.e. the moment in which the practice was adopted) and the motivations of adoption. In particular, in the model the chosen predictors (economic gains, social gains, economic losses and social losses) explain only a small fraction in the variation in the differences in the moment of adoption³³. The authors propose two alternative explanations for this finding. The former relies on the idea that adoption is influenced by the characteristics and the peculiar situation of the potential adopter. Simply speaking, adoption decision is very complex and perceived economic and social gains/losses are

³³ "Although a test of statistical significance suggests support for three of the four hypotheses, note that overall model fit is not strong. Using Cohen's (1988) definition of small ($R^2 \leq .02$) and medium ($R^2 \leq .15$) effects, the substantive significance of our results clearly falls within the small category. As such, our results raise important questions as to the substantive significance of predictor variables based on the institutional diffusion model" (Kennedy and Fiss, 2009: 909). In brief 'substantive significance' measures the real-world relevance of the findings in the context of the specific topic under study. An estimated coefficient could be statistically significant, but it could be so small that it has poor substantive significance (i.e. it is poor interesting as it explain a small fraction of a real-world phenomena).

only a fine slice of the overall complexity. This is reflected in the model. The latter claims that the role of timing has been simply overemphasized by previous research as it explains only a small fraction of the variance in the moment of adoption. Kennedy and Fiss support this second line of thought. In our opinion this conclusion appear to be premature for several reasons. First, their empirical findings support a research stream critiquing the ability of the two-stages model to predict a change in adoption motivations (Burns and Wholey, 1993; Goodstein, 1994; Kraatz and Zajac, 1996; Sherer and Lee, 2002). Therefore, their decision to espouse the thesis claiming that the competing model has limited predicting abilities is logical. Second, as far as we know their research is the only contribution that directly ask the motivations of adoption. As a consequence, we simply lack of empirical research investigating if other factors can influence adoption decisions. For instance, the compatibility with past experiences, the perceived complexity in using the innovation, the possibility to exchange information with prior adopters, the support of powerful social actors are all elements that might have an influence on an adoption decision. Therefore, the idea that decision is a complex process that could be influenced by the characteristic of the innovation and by the peculiar situation of each potential adopter appears to us much more reasonable in this moment. We are not saying that the assertion that adoption timing has been overemphasized is not reasonable at all, but we need much more research to confirm its validity.

To sum up, two main gaps seem to emerge from the critical discussion of Kennedy and Fiss (2009). First, it seems to us that the perceptions of the potential economic and social gains (or losses) in adoption decisions are only part of the story. In other words, other predictors have to be taken into account to explain early and late adoption. Second, the discussed model has proven to work for well-established and legitimated practices that have already proven to work in other sectors of the society. Therefore, more theoretical work is needed to understand the extent to which this model could explain the process of diffusion of 'true innovations'. Therefore, we rise the following research questions:

- (1) What factors could explain the differences in the motivations of adoption between early and late adopters?
- (2) What is the influence of these factors in explaining the motivation of adoption of a 'true innovation'?

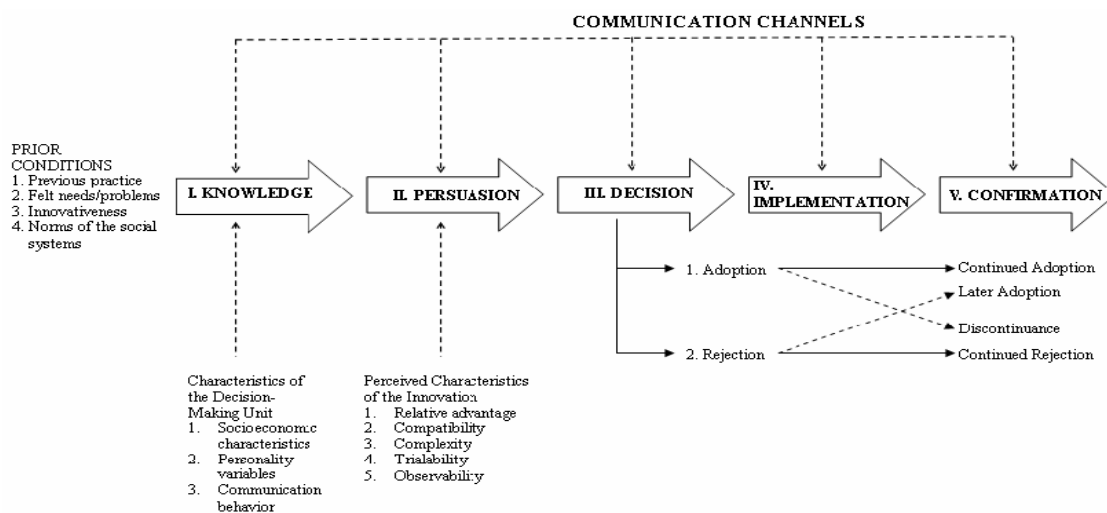
In order to answer these questions, we propose to use the Rogers' (1962; 2003) diffusion of innovation theory as a mean to refine the theoretical arguments proposed by Kennedy and Fiss (2009).

2.4 Understanding the theory of diffusion of innovations

Diffusion of innovation theory investigates the process by which an innovation spreads over time in a population of potential adopters (Rogers, 2003). During the forties and the fifties, diffusion arguments were independently elaborated in several disciplines such as anthropology, sociology, rural sociology, education, public health, communication, marketing, management and geography (Rogers and Shoemaker, 1971). Despite the objects of analysis of those disciplines were quite different, they displayed remarkable similarities in the description of the process of diffusion. In mid sixties Everett Rogers published the first edition of its general diffusion model by combining, integrating and generalizing the concepts elaborated by previous research (Rogers, 1962). Since this early formulation, Rogers has constantly updated his arguments and nowadays his theory is considered the standard model to study diffusion in social systems (Colyvas and Johnson, 2011; Rogers, 2003; Strang and Soule, 1998).

Rogers essentially claims that the decision to adopt an innovation is a process through which potential adopters (individuals, organizations, systems) evaluate a new idea, form an attitude towards it and finally decide to adopt or reject it. Compared to other decision making processes, this decision brings high levels of uncertainty on the advantages and disadvantages due to the newness of the innovation. Therefore, potential adopters actively seek and process information to reduce this uncertainty. Rogers developed a five-stages model to elucidate the mental processes that individuals usually follow when they are engaged in adoption decisions (see figure 1) (Rogers, 1962; Rogers, 2003).

Figure 1- The Innovation-decision process in individuals



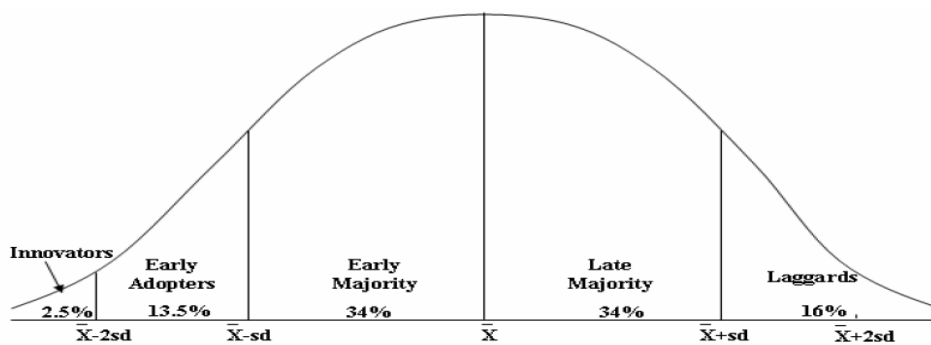
Source: (Rogers, 2003)

The process begins when a decision maker becomes conscious of the existence of an innovation and gains an understanding of how it is functioning (knowledge phase). Individuals either actively seek new solutions to solve their problems or they suddenly discover a new need when they find an innovation capable to solve it. Once being conscious that something could potentially solve a problem, individuals search for additional information on its use and the functioning principles. When sufficient knowledge is obtained, individuals typically start to form a more or less favorable attitude towards the innovation (persuasion phase). In this latter phase individuals become more psychologically involved as "he or she actively seeks information about the new idea, decides *what* messages he or she regards as credible, and decides *how* he or she interprets the information that is received" (Rogers, 2003: 175). At this stage several important processes could be found. First, individuals develop a general perception towards the innovation evaluating some of its key attributes (e.g. potential benefits, perceived difficulties in implementation, compatibility with previous experiences). Second, a potential adopter needs reinforcement from his peers to support the positive (or negative) attitude he is forming (i.e. each individual needs social confirmation that the attitude under construction is the correct one). Third, a positive attitude does not necessarily lead to an immediate adoption because the related needs/problems can be perceived as very unlikely to occur in a near future. Once the need is perceived as urgent, the innovation is adopted if it is considered the best course of action. Otherwise, the innovation is rejected. While adoption could emerge only after knowledge and persuasion phases, every described phase is a potential rejection point. After the decision phase, the adopter concretely uses the innovation (implementation phase). In doing so, individuals typically search for more information to better understand how to use it and how to solve the operational problems they can find. Implementation stage ends when the innovation loses its newness (i.e. the innovation becomes taken-for-granted in the day-by-day activities of the adopter). Finally, individuals seek reinforcement to eliminate or to reduce the dissonance coming from messages contrasting their previous adoption/rejection decision (confirmation stage).

Until now we have summarized the general model through which individuals choose to adopt or to reject an innovation. Clearly, this model does not explain why some individuals adopt an innovation at early stages of diffusion, while others prefer to wait. In order to answer to this question, diffusion scholars have developed a standard categorization of adopters based on their earliness in adopting something new (i.e. their innovativeness) (Rogers, 1958; Rogers, 1962). The idea behind this model is simply to transform the S-shaped curve of diffusion (displaying the cumulative number of adopters) in a bell-shaped curve approaching normality (displaying the frequency of new adopters). The normal distribution is assumed because interpersonal networks help to diffuse the knowledge

about the innovation. As a matter of fact, the individual decision to adopt is influenced by two factors: the number of peers in his interpersonal network that have previously adopted the innovation and the individual threshold (i.e. the number of peers that have to be engaged in an activity before a given individual will join it). In the first half of the normally distributed curve the number of adopters raise because it is very easy to find non-adopters in interpersonal networks. Moreover, early adopters and early majority have a low threshold. In the second half of the distribution, interpersonal network are increasingly formed by adopters and it is more and more difficult to find non-adopters. Therefore, the curve decreases over time until the entire social system (or almost the entire social system) has adopted the innovation. Figure 2 presents the five categories used to classify potential adopters based on their innovativeness (i.e. innovators, early adopters, early majority, late majority and laggards) and the approximate percentage of individuals included in each category using the standard deviation and the mean of the average time of adoption.

Figure 2- Classification of adopters bases on their innovativeness



Source: (Rogers, 2003)

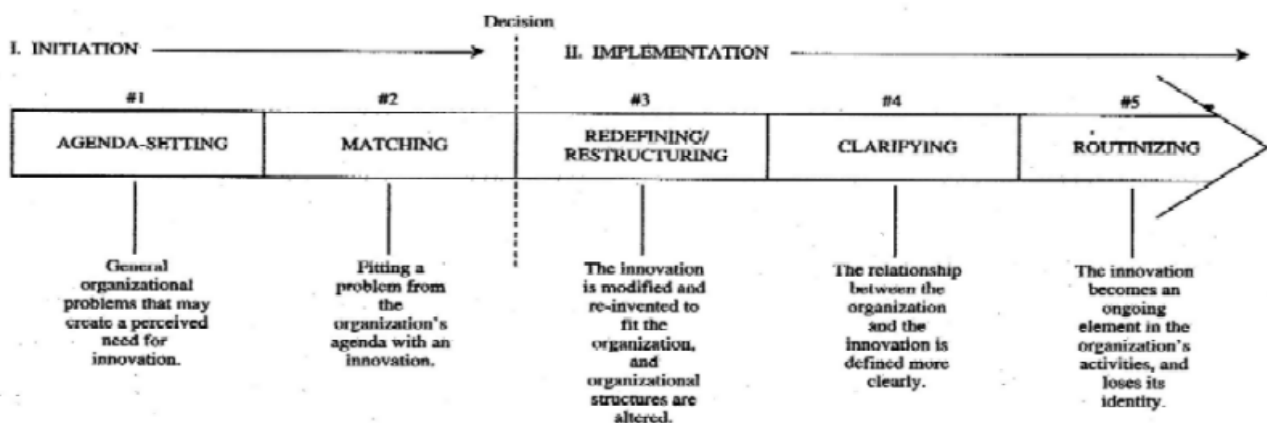
Despite the model can be applied only to concluded diffusion processes, this categorization is widely used in diffusion research as it is functional to identify ideal-types to elucidate the characteristics and the predominant values of individuals following in the identified categories. Diffusion scholars have identified socio-economic, personality and communication variables capable to explain innovativeness. For instance, an early adopter is typically more educated than a latter one, he has a better linkage with change agents, displays a greater attitude towards change and less risk aversion³⁴.

We highlight that these arguments were developed to investigate the diffusion of innovations among individuals. However, it soon become clear that they could be extended to study diffusion

³⁴ An extensive review on the main generalizations emerging from several diffusion studies could be found in Rogers (2003: 279 -299).

among populations of organizations. Following Rogers (2003), we could divide this branch of studies in two areas: organization innovativeness and innovation process. The former line of research tries to identify variables explaining why an organization becomes an early adopter. Organizational innovativeness is influenced by the characteristics of the organizational leader, the characteristics of the organizational structures and the characteristics of the systems in which the organization operates. In doing so, researchers simply apply, with minor adaptations, the models and methods previously developed for individuals to organizations. Factors such as organizational leader's attitude towards change, organization complexity, slack of resources and connection to change agents are positively related with innovativeness. By contrast, more formalized and centralized organizations are less likely to become early adopters. The latter line of research focuses on the innovation process in organizations, i.e. the study of all the phases prior to the decision to innovate and the subsequent implementation of the innovation (see figure 3).

Figure 3 - Five stages in the Innovation Process in Organizations



Source: (Rogers, 2003)

We could note that the innovation-decision process in organizations is much more complex if compared to that used to explain individuals decision. Simply speaking, organizations are continuously facing problems and they are continuously in search for suitable solutions capable to solve them. Decision makers have to identify problems, prioritize them and actively seek new ideas to cope with them (agenda setting stage). Then, decision makers conceptually match new ideas with the organizational needs to anticipate the potential benefits and disadvantages arising from their implementation (matching stage). If the balance between the advantages and disadvantages is favorable, the innovation is adopted. Implementation is the logical and consequent phase. The newly adopted innovation and the organizational structure and activities have to mutually adjust to fit (redefining/reconstructing stage). Over time, organizational members develop a common

understanding of the innovation through a process of social construction and, over time, they develop a common meaning (clarifying stage). Finally, the innovation becomes incorporated into the regular activities of the organization (routinizing stage).

After this brief discussion on the founding concepts of the diffusion of innovation theory, we'll now turn our attention to the four elements present in any process of diffusion: the innovation, the communication channels, the time and the social system. We'll separately review these four elements.

2.4.1 Innovation

Rogers refers to an innovation as "an idea, a practice or a project that is perceived as new by an individual or other units of adoption. An innovation presents an individual or an organization with a new alternative or alternatives, as well as new means of solving problems" (Rogers, 2003: xx).

Diffusion scholars have clearly in mind that innovations are not all alike as they diffuse more or less rapidly in the social system. Several variables are used to explain such differences in adoption rates: the attributes of the innovation, the type of the innovation-decision, the communication channels used, the nature of the social system and the efforts of change agents in promoting diffusion. Surprisingly, a great fraction of the variance in the rate of adoption (from 49% to 87%) is explained by the perceived attributes of the innovation (Rogers, 1995). Diffusion scholars usually use the following general classification system to conceptually distinguish the relevant attributes of an innovation³⁵:

1. *the relative advantage* measures the degree of superiority of an innovation compared to alternative solutions (i.e. the benefits coming from the innovation are expected to be superior to other alternatives). It is extremely difficult to identify a comprehensive list of the potential benefits as they vary from innovation to innovation. For instance, perceived benefits are the increase in economic profitability (e.g. an increase in efficiency of a new technology), the limited initial cost related to adoption, the possibility to save time in doing something or the increase in social prestige or status (e.g. early adopters of new fashion clothes). Incentives (i.e. direct or indirect payments given to potential adopters) also contribute to increase the relative advantage and, therefore, to support the diffusion. Independently from the type of advantages, the higher and the clearer is the perceived advantage, the more likely a great number of individuals will adopt the innovation in its stages of diffusion;

³⁵ Clearly, these attributes are empirically related in the mind of each adopter. However, diffusion research has developed some methodological techniques to separately measure them.

2. *the compatibility* measures the degree of perceived coherence between the innovation and the past experiences and the social-cultural values of an adopter. Simply speaking, it is extremely complex to make sense of something new. In order to reduce this complexity, individuals use familiar mental models to interpret something that they have never seen before (i.e. any new idea is evaluated in comparison to existing ones). Cultural beliefs, past experiences and present needs are good reference points to assess the desirability of an innovation. Diffusion studies have demonstrated that high levels of perceived compatibility have a positive influence on the rate of adoption;
3. *the complexity* measures the degree to which an innovation is perceived as difficult to understand and use. The more an innovation is perceived as complex the less it will easily and rapidly diffuse;
4. *the trialability* measures the degree to which an innovation may be experimented on limited basis. The possibility to first test the potentialities of an innovation on limited basis is positively related with its rate of adoption. This is particularly true for early adopters who face the higher degrees of uncertainty;
5. *the observability* measures to what extent the results of an innovation are visible to other potential adopters. The easier the results are observable, the more likely is the possibility to adopt the innovation. Observability is easily understandable for material innovations (e.g. a new technology). The effects of immaterial innovations are less observable and, therefore, their spreading is more difficult.

In summary, we could say that fast diffusing innovations are those that display low levels of complexity combined with high levels of comparative advantages, high compatibility with the potential adopter values and past experiences, high possibilities to be experimented on limited basis and high observability of the results. On this point, we want to highlight that what matters in the diffusion process is the *individual perception* of these attributes rather than their real impacts.

2.4.2 Communication channels

Communication channels are the means by which messages spread among potential adopters. As previously discussed, the innovation-decision process is essentially an information-seeking activity to reduce uncertainty about the potential advantages and disadvantages of an innovation. Communication channels are therefore central to spread useful knowledge and to lower the uncertainty of other potential adopters.

Communication channels are classified according to their nature (mass media or interpersonal) and their source (locative or cosmopolite). Mass media channels could simultaneously reach a great number of potential adopters linking individuals to source of communication outside their social system (cosmopolite channels of communication). Interpersonal channels are more effective in persuading peers (i.e. individuals sharing relevant attribute such as beliefs, education, economic status, interests, physical proximity and so on) to adopt a new idea. Diffusion scholars use the concept of 'homophily' to highlight that communication is much more effective among individuals sharing some attributes³⁶. The described categorization is relevant as the type of communication channel influences both the innovation-decision process and the class of adopters. Mass media and cosmopolite communication channels are more important to reduce uncertainty in the knowledge phase, while interpersonal channels have a greater impact in the persuasion stage. Similarly, early adopters are more sensitive to mass media and to cosmopolite channels, while later ones are more influenced by interpersonal ones.

2.4.3 Social system

A social system is as "a set of interrelated units (e.g. individuals, informal groups, organizations, and other subsystems) engaged in joint problem solving to accomplish a common goal" (Rogers, 2003: 23). Due to the fact that diffusion takes place in a social system, it's obvious that the characteristics of the social system play a role in the process of diffusion. These characteristics could be listed as follows:

- *social structure*, i.e. the formal arrangements that provide stability and regularity to human behavior in a given social system;
- *norms*, i.e. the established behavior patterns for the members in a social system;
- *opinion leaders*, i.e. the units in the system capable to influence the attitudes of other units with a relative frequency. Simply speaking, opinion leadership is the degree to which an individual (or an organization) has the recognized ability to act as a model for others³⁷. This leadership could emerge for several reasons: great mass media exposure, recognized cosmopolitanism and innovativeness, greater contact with change agents or higher social status. Opinion leaders are central in boosting the rate of adoption of an innovation in both homophilus and heterophilus networks. In the former case, they use their interpersonal

³⁶ By contrast, the concept of 'heterophily' refers to the communication among individuals that display differences in background, competences, social economic status, beliefs and so on. Heterophilus causes a state of frustration making this type of communications less effective.

³⁷ This degree of recognized leadership could be measured using different methods such as sociometric techniques, informant's ratings or observation method.

channels to stimulate diffusion among peers, while in the latter they use their 'superiority' (e.g. higher socio-economical status, higher education, greater contact with change agents) to guide the decision of followers;

- *change agents*, i.e. actors not embedded in the social system seeking to stimulate (or to prevent) the adoption of a new idea in a given social system. Change agents usually possess an high degree of expertise on the innovation they are diffusing and they act believing that the innovation is positive (or negative) for potential adopters. In several cases (e.g. health prevention or control of birth programs in developing countries), change agents act as 'communication links' between an agency that wants to diffuse an innovation (e.g. State departments, municipal offices, schools) and the population of potential adopters. In this sense, change agents define and realize interventions to produce a well-identifiable change in individual behavior (e.g. use of medicines or contraceptives). In other cases, change agents are consultants or experts that operate directly with client firms to introduce an innovation (e.g. consultants that introduce a new organizational form). In both cases, successful diffusion depends on the efforts of change agents in contacting their clients, on the degree of credibility, homophily and empathy existing between the change agent and his clients and on the possibility to stimulate diffusion by involving opinion leaders;
- *type of innovation decision*, i.e. how the decision to adopt (or to reject) a particular innovation is taken. Four types of decision could be taken: optional, collective, authority and contingent. In optional type each potential adopter takes its decision independently from the others, while in collective type the decision is taken by the entire community of potential adopters (i.e. individuals could explain their opinion, but they have to conform to the common decision once it is taken). By contrast, in authority type the adoption decision is taken by relatively few powerful individuals in the system, while other members do not have any influence on the decision. Finally, contingent decisions are simply a sequential combination of the previously discussed types of decisions;
- *consequences of innovations*, i.e. the changes that occur to individuals or to social system as a result of the adoption or rejection of an innovation. Consequences could be either desirable or not desirable, direct or not indirect, anticipated or unanticipated.

2.4.4 Time

Time is a variable that helps to explain the innovation-decision process (i.e. the process in which individuals pass from the first knowledge of an innovation to its confirmation), the innovativeness (i.e. the earliness of an individual in adopting a new idea) and the rate of adoption of an innovation.

After this brief analysis on the theory of diffusion, in the next section we'll discuss how it can be used to refine the framing perspective in adoption decisions developed by Kennedy and Fiss (2009).

2.5 Extending motivations of adoption using the theory of diffusion

In order to better develop our arguments, in this section we'll use only two categories of adopters rather than the five categories used to classify adopters according to their innovativeness. These categories are:

- 'early adopters', including the innovators, the early adopters and the early majority of potential adopters as defined by Rogers (2003);
- 'late adopters', including the late majority of adopters and the laggards as defined in Rogers (2003).

We have chosen this partition following Kennedy and Fiss (2009). The authors identify three categories based on the year of adoption of TQM practices: 'very early adopters', 'early adopters' and 'late adopters'. Due to the absence of changes in the results of the statistical analysis, the authors combine the motivation of adoption of the 'very early adopters' (i.e. the innovators) with those of the early adopters³⁸. Despite the absence of statistical differences in the model, this distinction can be considered as coherent with diffusion arguments. In particular the more the diffusion process spreads, the lower is the perceived uncertainty surrounding the innovation. As a result, the early adopters and the early majority (as defined by Rogers) face a more similar degree of uncertainty than the late majority and the laggards. Moreover, innovators have been considered as early adopters in several studies (e.g. (Kennedy and Fiss, 2009; Tolbert and Zucker, 1983; Westphal et al., 1997)). Therefore, we expect that innovators and early adopters frame the adoption situation in a very similar way.

Coherently to this distinction, we could refine the claims on how early adopters and late adopters frame the adoption situation. Following the studies that apply the theory of framing in new institutional research (Chattopadhyay et al., 2001; Dutton and Jackson, 1987; George et al., 2006; Kennedy and Fiss, 2009), we expect that early adopters are more likely to frame the adoption of an innovation as an opportunity to obtain economic and social gains. By contrast, we expect that later

³⁸ "We measured early adoption as an ordinal variable (coded 0 if a hospital began using TQM less than two years ago, 1 for more than two years ago but less than four years ago, and 2 for more than four years ago). We conducted additional analyses using a dichotomous measure of adoption time similar to that used by Westphal et al. (1997), dividing early and late adopters at approximately the midpoint of the observed adoption period and so grouping very early adopters (about 4 percent of all adopters) with early adopters. Using the alternative measure had essentially no effect on results"(Kennedy and Fiss, 2009: 906)

adopters frame the adoption as a potential threat due to the risk to be perceived as illegitimate or to suffer for economic losses.

On this basis, we can discuss the perceived attributes used to predict the moment of adoption of an innovation. According to Kennedy and Fiss (2009) early adopters frame adoption as an opportunity thanks to the perceived economic and social gains, while later adopters frame the situation as a threat on the basis of the expected economic and social losses. Using the terms developed by Rogers (2003), this means that Kennedy and Fiss have taken into account only the 'relative advantage' that early and late adopters consider in their innovation-decision process (i.e. the comparative economic and social benefits). We have used the term 'benefit' as a comprehensive expression to include both perceived opportunities and threats. As previously discussed, the decision to adopt a practice in latter stages of diffusion is related to the decision to avoid economic and social losses. In this sense, the organization is still obtaining a benefit coming from the fact it is not incurring in economic and social losses. As previously discussed, Rogers's framework identifies several other predictors capable to explain why a potential adopter choose to adopt an innovation in early or latter stages of its diffusion. These predictors are the perceived complexity, compatibility, trialability and result observability. Table 1 summarizes the predictors used as motivations of adoption for both early and late adopters in the traditional two-stages model of diffusion elaborated by Tolbert and Zucker (1983), in the framing perspective developed by Kennedy and Fiss (2009) and in Rogers' (2003) framework.

Table 1- Predictors used as motivation of adoption

		Tolbert and Zucker (1983)		Kennedy and Fiss (2009)		Rogers (2003)	
		Early Adopter	Late Adopter	Early Adopter	Late Adopter	Early Adopter	Late Adopter
Relative advantage	a) Economic	X		X	X	X	X
	b) Social		X	X	X	X	X
Innovation compatibility						X	X
Innovation complexity						X	X
Innovation trialability						X	X
Innovation observability						X	X

Source: own elaboration

As the table clearly shows, in two-stages model the perceived economic benefits are the predictors used to explain early adoption, while later adopters are driven by the desire to not appear illegitimate (i.e. social motivations). By contrast, Kennedy and Fiss claim that both early and late adopters take into account economic and social benefits. Finally, Rogers (2003) contends that

economic and social benefits are only two of the characteristics capable to predict adoption decisions in early and late stages. These characteristics have been empirically confirmed by a wide range of studies (Rogers, 2003). These studies demonstrate that fast-diffusing innovations are those that display low levels of complexity, high levels of advantages, high compatibility, high possibilities to be experimented on limited basis and high observability of the results.

On this basis, we'll explain how these arguments could be used to provide a more fine-grained analysis in the motivations of adoption debate. We first contend that there is a difference between familiar innovations and non familiar innovations (i.e. true innovations). The former group of innovations refer to ideas, practices and objects that are perceived as new in the community of potential adopters, but in fact they have been already used in other communities. This is the case of TQM tools in early nineties that were perceived as new by US public hospitals, but they had already proven to work in private sector. By contrast, the latter group include innovations that are new for both the potential adopters and the society as a whole. While these practices diffuse, innovators and early adopters contribute to create the idea that they are valuable for the community of potential adopters (Fiss and Zajac, 2006; Hargadon and Douglas, 2001; Strang and Meyer, 1993). The more the innovation is legitimated and taken-for-grated, the more it is institutionalized (Colyvas and Johnson, 2011).

While we expect that the possibility to obtain economic gains (or to avoid economic losses) is present in all the categories of adopters³⁹, we claim that the distinction between familiar and non familiar innovations could be useful to present a more fine-grained analysis of adoption. In a familiar innovation, we expect that very early adopters take into account the social benefits arising from the adoption of an innovation that has already proven to work in other sectors of the society (i.e. increase in organizational status, reputation or legitimacy). This idea is clearly embedded in the findings of Kennedy and Fiss (2009). As previously discussed, in their analysis social gains are operationalized as the possibility to be perceived as market leaders among American surgical hospitals thanks to the adoption of a well-established practice to improve service quality such as TQM. If TQM tools were a non familiar innovation, it seems reasonable that the possibility to be perceived as a market leader would be very limited due to the uncertainty around the expected quality improvements. Therefore, it seems to us that the opportunity to obtain social gains from the adoption of a non familiar innovation is very unlikely. We support this claim with two arguments. First, non familiar innovations have not yet proven to be valuable for the community of adopters.

³⁹ We expect that rational decision makers are always motivated to improve the economic performance of the organization. Therefore, each category of adopters will display a greater motivation to adopt an innovation perceived to grant economic benefits. This is true for both familiar and non familiar innovations.

Second, they need to develop connections with valuable reference points present in the community to be considered capable to generate social gains. Due to the fact that this process is well established only in the latter phases of diffusion, it seems reasonable to us that only the late majority and the laggards take into account the social benefits generated by a non familiar innovation. For other categories of adopters, the development of assertions on their ability to include social benefits in their adoption decision is much more complex due to the fact it depends on the rapidity through which the innovation is perceived as valuable in the community.

However, if the diffusion is championed by powerful groups of social actors (i.e. consultants, professional associations, the media or the State), very early adopters could desire to obtain the approval from these subjects and this could influence their adoption decision. Following some of the ideas of management fashion theory⁴⁰, decision makers are subjected to societal expectations on the use efficient techniques and up-to date practices in their everyday activities. Moreover, they are expected to adopt new and improved practices as soon as they are available. Therefore, decision makers could adopt practices not following a real need, but because they want to obtain rational-instrumental legitimacy coming from institutionalized norms of progress (Abrahamson, 1991; Abrahamson, 1996; Abrahamson and Fairchild, 1999; Abrahamson and Rosenkopf, 1993). In other words, "organizing is not only about reaching for technical efficiency in getting the job done, but also about presenting one's organization and management as 'informed', 'up-to-date' and 'compliant'" (Palmer et al., 2008: 739). Despite these arguments have been developed to explain why technically inefficient innovations diffuses or efficient innovations are rejected by organizations, we can use them to support the idea that some form of social benefit could be searched even in the early stages of diffusion of a non familiar innovation. Simply speaking, powerful social actors and social expectations could act as a source of legitimacy capable to motivate early adopters (Abrahamson, 1991; Davis and Greve, 1997; Greenwood et al., 2002; Strang and Meyer, 1993; Vasi, 2006).

While the previous discussion on the relative advantages has taken long, the discussion of the other predictors appears to be much more simple. The reason is that the other predictors are common to both familiar and non familiar innovations and their effect is constant for all the categories. Several studies support the idea that innovations coherent with existing norms have a fast and easy diffusion

⁴⁰ In this theory, management fashion setters (e.g. consultants, business school) actively try to create a series of temporary and lucrative fashions generating an intrinsic temporal instability in the managerial techniques in order to make profits. Fashion setters essentially use rhetoric, emotionally charged and enthusiastic discourse to redefine the collective beliefs convincing organizations that a certain practice is rational, highly innovative and meet their immediate needs (Clark, 2004). As a consequence, a wave of popularity in managerial techniques could emerge from the interaction of the demand side (i.e. manager requesting new practices) and the supply side (i.e. manager fashion setters) in the market of managerial knowledge.

(Davis and Greve, 1997; Greve, 1998; Jonsson, 2003; Knudsen et al., 2003; Strang and Tuma, 1993). On this basis, we could assert that early and late adopters are motivated to adopt an innovation if it is perceived as highly compatible with their past experiences and their existing socio-cultural values. Similarly, they are motivated to adopt an innovation when it is perceived as easy to use (i.e. complexity), when the results obtained by the prior adopters could be easily observed (i.e. observability) and when it could be first tested on limited basis than later adopters (i.e. trialability).

To sum up our arguments, for familiar innovations we claim that:

***P1:** Early and late adopters are motivated to adopt an innovation if they perceive high and clear economic benefits.*

***P2:** Early and late adopters are motivated to adopt an innovation if they perceive high and clear social benefits.*

***P3:** Early and late adopters are motivated to adopt an innovation if they perceive high levels of perceived compatibility with past experiences and values.*

***P4:** Early and late adopters are motivated to adopt an innovation if they perceive the possibility to easily understand and use it.*

***P5:** Early adopters are motivated to adopt an innovation if they perceive the possibility trail it. While this attribute is still present for late adopters, it is not as relevant as for early ones.*

***P6:** Early and late adopters are motivated to adopt an innovation if they perceive high result observability.*

For non familiar innovations (i.e. true innovations) we expect that:

***P7:** Early and late adopters are motivated to adopt an innovation if they perceive high and clear economic benefits.*

***P8:** Late adopters are motivated to adopt an innovation if they perceive high and clear social benefits coming from it. The rapidity through which these social benefits emerge depends on how fast the non-familiar innovation is related to valuable reference points in the society.*

***P9:** Early adopters can be motivated to adopt an innovation if they perceive social benefits coming from powerful social actors and/or social expectations.*

***P10:** Early and late adopters are motivated to adopt an innovation if they perceive high levels of perceived compatibility with past experiences and values.*

***P11:** Early and late adopters are motivated to adopt an innovation if they perceive the possibility to easily understand and use it.*

P12: Early adopters are motivated to adopt an innovation if they perceive the possibility trail it. While this attribute is still present for late adopters, it is not as relevant as for early ones.

P13: Early and late adopters are motivated to adopt an innovation if they perceive high result observability.

2.6 Conclusion

In this chapter we have critically reviewed one of the most innovative contributions in the motivations of adoption debate: "*Institutionalization, framing and diffusion: the logic of TQM adoption and implementation decisions among US hospitals*" published in 2009 in the *Strategic Management Journal* by M. T. Kennedy and by P. C. Fiss. While the traditional two-stages model of diffusion developed by Tolbert and Zucker (1983) claims that adoption decisions are driven by technical reasons for early adopters and by legitimacy reasons for late adopters, Kennedy and Fiss demonstrate that both early and late adopters have the simultaneous interest to "do better" and "look good". In other words, potential adopters take always into account social and economic motives while deciding to adopt a practice. In particular, in early stages an innovation is adopted thanks to the perceived opportunity to achieve economic and social gains. The more an innovation becomes diffused and institutionalized, the more late adopters desire to avoid economic and social losses. Despite the clear innovativeness of the contribution, several limits seem to emerge. First, the contribution does not demonstrate the process of institutionalization. Second, the model has proven to work for well established and familiar legitimated practices that diffuse from one sector in the society to another. Third, the chosen predictors explain only a small fraction in the variation of the moment of adoption. On this basis, we claim that (1) Roger's diffusion of innovation theory could help to identify other factors capable to explain the differences in the motivation of adoption and (2) the model has to be adapted to a non familiar innovation. We have shown that Kennedy and Fiss have used only one of the perceived characteristics explaining diffusion: the relative advantage. Therefore, we suggest to include innovation perceived compatibility, complexity, trialability and observability as elements capable to explain the variations in adoption decisions.

Chapter 3

RESEARCH QUESTION AND RESEARCH DESIGN

In the previous chapters we have discussed how the adoption motivation debate is moving from the 'two-stages' model of diffusion to the 'framing perspective'. This latter perspective claims that the change in adoption motivations can be better understood in terms of perceived opportunities and threats rather than in terms of economic and legitimacy advantages. In their study on the diffusion of TQM practices among US surgical hospitals in early nineties, Kennedy and Fiss (2009) find support for the idea that social and economic reasons combine rather than mutually exclude to explain adoption decisions of early and late adopters. However, the chosen predictors (economic gains, social gains, economic losses and social losses) lead to a disappointingly low value of model fit. This fact makes Kennedy and Fiss to wonder what is missing in the analysis and to raise a call to further investigate this aspect. In trying to answer to this call, we suggest to refine the framing perspective in several ways.

First, we suggest to combine the framing perspective with diffusion of innovation theory (Rogers, 1962; Rogers, 2003). We contend that the framing perspective, as developed by Kennedy and Fiss (2009), has considered only one of the perceived attributes explaining adoption decisions, namely the 'relative advantage' of the innovation. Other relevant attributes ('complexity', 'compatibility', 'trialability' and 'result observability') can explain whether and when an innovation is adopted. We also suggest to add one more attribute: perceived institutionalization. Following a great number studies in new institutional research (Fligstein, 1985; Tolbert and Zucker, 1983; Westphal and Zajac, 1997), Kennedy and Fiss (2009) assume that the widespread diffusion of TQM equals to its institutionalization. However 'institutionalization' refers to how things become a resilient part of the social reality, while 'diffusion' refers to how things spread in the community of potential adopters (Colyvas and Johnson, 2011).

Second, scholars normally apply statistical techniques based on linear algebra to identify those perceived attributes capable to explain adoption decisions. These techniques separately measure the contribution of each independent variable (i.e. each perceived attribute) in explaining the variation of the dependent variable (i.e. being an early or a late adopter). Thus, each perceived attribute included in the model 'competes' with other independent variables to identify the 'best' combination predicting the variability in adoption-decisions. In contrast to this mainstream approach, we want to use Configurational Comparative Methods (CCMs) to simultaneously identify alternative combinations of perceived attributes capable to explain adoption decisions in the same category of adopters. Thanks to the use of a minimization algorithm based on Boolean algebra, CCMs are well

suited to do so (Berg-Schlusser et al., 2008; Schneider and Grofman, 2006; Wagemann and Schneider, 2010a).

Third, we suggest to take into account the type of innovation to which the framing perspective is applied to. In particular, we suggest to distinguish between 'familiar innovations' and 'not familiar' ones. The former group includes ideas and practices that are perceived as 'new' in the community of potential adopters, while they are already known in other sectors of the society. The latter group identifies ideas and practices that are both new for the community of potential adopters and the society as a whole. The adoption of those innovations is more complex as, in order to generate social gains capable to support their diffusion, they need to be perceived as valuable by both adopters and non-adopters (Fiss and Zajac, 2006; Hargadon and Douglas, 2001; Strang and Meyer, 1993). However, social benefits can emerge even in the early diffusion of a non-familiar innovation if its spreading is championed by powerful social actors (i.e. change agents). If the diffusion process is successful, the innovation will become increasingly perceived as a stable, resilient and enduring way of organizing the activities in the community of potential adopters (Colyvas and Johnson, 2011).

In our research, we focus on early adopters of a non familiar innovation. Two reasons support this decision. First, Kennedy and Fiss (2009) present some theoretical insights on how early and late adopters frame the adoption of a familiar innovation. As far as we know, the framing perspective has never been applied to the study of non-familiar innovations. Second, in late stages of diffusion a non-familiar innovation is simply a diffused practice/idea in the community of potential adopters. Therefore, late adopters of a non-familiar innovation frame adoption decision as a threat, i.e. they desire to avoid economic and social losses arising from non-adoption of a widespread practice. In this sense, the behavior of late adopters of a familiar and a non familiar innovation is essentially similar. On this basis, it seems to us that early adopters of a non familiar innovation is still an undeveloped area of research. Therefore, we raise the following question:

How do the perceived attributes combine to explain earliness in adoption of a non-familiar innovation?

While Kennedy and Fiss (2009) investigate an entire diffusion process, we are much more interested in examining how perceived attributes *combine to matter* in the decision to adopt a non familiar innovation among early adopters. In this sense, in our study we'll not use all the propositions we have theoretically derived in the previous chapter. In this sense, we are focusing

only on those propositions investigating how (very) early adopters frame the perceived attributes of a diffusing innovation.

In our research, we'll study the diffusion of a new form of strategic alliance: the network contract (*contratto di rete*). We believe that this is an unique opportunity to investigate the early diffusion of a non familiar innovation. First, network contract is the first contractual strategic alliance specifically designed for Italian SMEs following the Small Business Act principles. In this sense, it can be considered as new for both the potential adopters and the entire society. Second, the decision to stipulate a network contract bears high levels of uncertainty to potential adopters as the legislation is still relatively new and it is subject to periodical changes. Despite this fact, several change agents (i.e. the State, the professional associations of consultants, the chamber of commerce) are devoting a substantial effort to stimulate its diffusion to increase the competitiveness of Italian SMEs. Third, this new form of cooperation is still in its early stages of diffusion. Since its introduction in 2010, 764 network contract have been signed and 4.093 firms have been involved in this type of agreement. Despite the fact that these numbers are constantly growing over time, they are still risible if compared to the millions of micro and small firms present in Italy.

The rest of the thesis is organized as follows. In chapter 4, we'll discuss network contract legislation. In particular, we'll relate this new form of strategic alliance to a broader strategy developed by the European Union to create a more supportive environment for SMEs. Moreover, we'll analyze the evolution of the discipline in order to identify the main differences with other cooperative agreements present in Italian Commercial law. Then, in chapter 5 we present network contract as a diffusing innovation among Italian firms. As far as we know, this is the first time that a strategic alliance is investigated as a diffusing innovation. By combining the theoretical insights of strategic management literature and the knowledge of several experts, we define a set of items suitable to measure the perceived attributes of network contract. In chapter 6, we focus on Configurational Comparative Methods (CCMs) as a new way to shed light on causal complexity in adoption decisions. In particular, we provide an up-to-date review of the philosophy and the technical aspects of these methods. We also discuss the three of the main techniques used in CCMs, namely crisp set (csQCA), fuzzy sets (fsQCA) and multi-value (mvQCA). Finally, in chapter 7 we apply fsQCA on the early diffusion of network contract among industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto.

Chapter 4

SMALL BUSINESS ACT AND NETWORK CONTRACT

In this chapter we analyze the evolution of network contract and we compare this new contractual alliance with other cooperative agreements already present in Italian commercial law. In doing so, we first review the evolution of European policies supporting SMEs (section 4.2). Then, we analyze the initiatives pursued by the Italian Government to implement the Small Business Act in the country and the related results (section 4.3). We claim that network contract is the most promising initiative to support Italian SMEs. Therefore, we carefully analyze the legal framework (section 4.4) and the evolution in the discipline (section 4.5). On this basis, we shed light on the advantages and disadvantages that stipulating a network contract could grant if compared to a consortium, a limited liability consortium, a European Economic Interest Group, a Temporary Association of Firms and a group of related bilateral contracts (section 4.6). We conclude that network contract is not the "a priori" best solution to solve the collaborative needs of Italian SMEs (section 4.7).

4.1 Introduction

Micro, small and medium-sized firms constitutes more than the 99% of European business enterprises and provide the two thirds of the overall European employment. Since 2000 the European Commission and the European Parliament devoted a substantial effort in improving SMEs competitiveness. Following ten principles contained in the *Small Business Act for Europe* (SBA hereafter), each Member State has to adopt concrete policies and legislative actions to improve the regulatory environment in which their national SMEs operate. These policies are crucial for Italy due to the huge number of micro and small enterprises constituting the backbone of its economy. In 2009 the Italian Government introduced a new legislative framework to stimulate the development of contractual strategic alliances in order to overcome some of the traditional limits of the small size. This new form of collaboration is the network contract (*contratto di rete*). In this chapter we connect this legislation to a broader tentative to support European SMEs. As far as we know, this interrelation has never been deeply investigated. On one hand, the new legal framework is considered a good practice in SBA by the European Commission and a concrete way to overcome the economic crisis (Cafaggi and Iamiceli, 2009; Iamiceli, 2009b; Romano, 2012; Villa, 2010). On the other hand, European authorities poorly understand this practice because a narrow number of the contributions on the topic are written in English (Cafaggi, 2011a; Ferrari, 2010; Villa and Antonelli, 2009). In order to fulfill these gaps, this chapter is organized as follows. Section 4.2 presents the evolution of the European policies supporting SMEs from the *Lisbon Strategy* to nowadays. In particular, we discuss in detail the principles contained in the *Small Business Act for Europe* and their relations with *Europe 2020*. Then, section 4.3 presents the strategies adopted to implement the SBA in Italy and the results obtained in comparison to other EU

countries. Section 4.4 and section 4.5 analyze the legal framework and the evolution of the normative. On this basis, section 4.6 compares the main differences between network contract and other forms of cooperation already present in Italian legislation.

4.2 The European policies to support SMEs: from Lisbon Strategy to Small Business Act

The European Union has a long tradition in developing frameworks of integrated policies to support SMEs. This tradition dated back in 2000 with the Lisbon Strategy, an ambitious set of coordinated policies aimed at creating a competitive and dynamic knowledge based economy capable to support a sustainable economic growth and to support the social cohesion in the Member States (European Commission, 2005b; European Commission, 2005e). We do not go in an in depth discussion on this early policy as the downturn in the economic conditions between 2000 and 2005, the poor coordination among Member States and the conflicting priorities in the policy agenda led to an increase in the growth gap between Europe and the United States (Kok, 2004). However, these disappointing results forced the European Commission to issue, in 2005, a new integrated policy named "Growth and Jobs Strategy". Learning from the previous mistakes, this policy concentrated the efforts on a narrower sets of objectives and simplified the guidelines to coordinate the actions of the Member States. The objectives of the "Growth and Job Strategy" were the followings (European Commission, 2005e):

- i. Europe has to become a more attractive place to invest and work by fully implementing the existing European legislation in Member States, by completing the process of creation of a competitive single market and by expanding European infrastructures;
- ii. knowledge and innovation have to foster the European sustainable growth. Member States and other public authorities have to support innovation, to improve investments in R&D, to promote the creation of innovation poles and to increase eco-innovation;
- iii. Member States have to support the creation of more and better jobs by improving workers' flexibility, education and social protection systems.

These ambitious goals were translated in precise objectives responsibilities, deadlines and measures to evaluate the results obtained by the Member States (European Commission, 2005a; European Commission, 2005d). For instance, the European Commission had a central role in initiating the policies, in insuring their implementation and in supporting national activities, while State Members had to incorporate the assigned objectives in their national policies. These guidelines were accepted by the European Council and the European Parliament in March 2005 (European Commission,

2005a). In such framework, policies designed to support SMEs played a key role. The European Commission acknowledged this fact while stating:

"Action here is of particular importance for Europe's small and medium sized businesses (SMEs) which constitute 99% of all enterprises and two third of employment. There are just too many obstacles to becoming an entrepreneur or starting a business, and, therefore, Europe is missing opportunities. Encouraging more entrepreneurial initiative implies promoting more entrepreneurial attitudes. The balance between risk and reward associated with entrepreneurship should be reviewed" (European Commission, 2005d: 16)

The European Commission also recognized that European and national legislations had to be simplified because "regulatory burdens also disproportionately affect SMEs which usually have limited resources to deal with the administration such rules often imply" (European Commission, 2005d: 19-20). Moreover, an increased flexibility in the labor market will support SMEs' ability to grow (European Commission, 2005d: 28).

These general guidelines were implemented in a policy framework specifically designed to help European SMEs to compete in a global market, to grow and to create new jobs (European Commission, 2005c). By integrating previously developed policy instruments (i.e. the European Charter for Small Enterprises⁴¹ and the Entrepreneurship Action Plan), this framework provided financial support and advisory to national governments to develop concrete actions to apply the "Think Small First" principle in five key areas: the promotion of entrepreneurship and skills, the increase in market access of SMEs, the simplifications in laws and regulations ('cutting the red tape'), the participation of SMEs in the EU policy-making and the reduction in the difficulties to access to valuable resources. In 2007 a mid-term review of the policy positively assessed the results reached (European Commission, 2007). The report shown that the requests coming from SMEs were increasingly integrated in European and national policies, the amount of structural funds used to support SMEs was increased and some important simplifications in European legislation were adopted. Despite these encouraging progresses, an additional effort to further improve the regulative environment of SMEs was asked to the Commission (European Commission, 2008a). In 2008 three lines of action were adopted by the Commission to answer to this challenge. First, the Commission issued a new set of legislative proposals to support SMEs⁴². Second, it renewed the efforts to stimulate the cooperation between the European Union and the Member States to implement the "Growth and Job Strategy". Third, it developed a set of principles to guide the creation of a more administrative-friendly environment for SMEs. This set of principles, which is essentially the

⁴¹ The European Charter for Small Enterprises was created after the Lisbon Strategy and represented a formal commitment of Member States and the European Commission to develop a supportive business environment for small firms (European Commission, 2000).

⁴² These legislative proposals could be summarized as follows: a general block exemption regulation on State Aids; a regulation providing for a Statute for a European Private Company; a directive on Reduced VAT rates; a proposal to further modernize, simplify and harmonize rules on VAT invoicing; an amendment to the Directive 2000/35/EC on late payments.

continuation of the "Growth and Jobs Strategy", is the Small Business Act (SBA)⁴³ (European Commission, 2008b). The purpose of the Act is to "improve the overall policy approach to entrepreneurship, to irreversibly anchor the 'Think Small First' principle in policymaking from regulation to public service, and to promote SMEs' growth by helping them tackle the remaining problems which hamper their development" (European Commission, 2008b: 3). Simply speaking, the basic idea is to help European SMEs to reduce the gap in productivity, growth and innovation they experience in comparison to American counterparts and to large firms. We clarify that these principles are not legally binding although the Member States had a formal commitment to apply them (European Parliament, 2009). These principles are applied to micro, small and medium-sized firms, i.e. to almost 99% of European companies⁴⁴. The SBA principles and the related policies can be summarized as follows (European Commission, 2008b):

1. *Create an environment in which entrepreneurship is rewarded and socially supported.* The idea is to improve the percentage of the European population that desire to become an entrepreneur. This objective could be reached by developing the necessary skills through education, by facilitating the process of business transfer and by releasing the hidden potential of female and immigrant entrepreneurship;
2. *Ensure that honest entrepreneurs quickly get a second chance if they face bankruptcy.* Due to the high numbers of annual bankruptcies, entrepreneurs choosing to re-start a business need a second chance. By reducing the length of the bankruptcy procedures, Member States have to diffuse the idea that failure is not a 'mark of shame';
3. *Design rules and regulations according to the "Think Small First" principle.* The "Think Small First" principle is defined as follows:

"The definition of the 'Think Small First' principle implies that policy makers give full consideration to SMEs at the early policy development stage. Ideally rules impacting on business should be created from the SMEs point of view or in other words, SMEs should be considered by public authorities as being their "prime customers" as far as business regulation is concerned. The principle relies on the fact that "one size does not fit all" but a lighter touch approach can also be beneficial to larger businesses. Conversely, rules and procedures designed for large companies create disproportionate, if not unbearable burdens for SMEs as they lack the economies of scale" (European Commission, 2009d: 7)

In other words, the European Union and the Member States have to take into account the characteristics of SMEs while designing a new administrative regulation (or simplifying an

⁴³ On 25th June 2008 the European Commission published the SBA. On 1st December 2008 Member States adopted a plan ("SBA Action Plan") containing a set of short and medium term policies to improve the regulatory environment and to increase the access of SMEs to financial resources. Few days later, the European Parliament formally approved the SBA (4th December) and the European Council supported the implementation of the "SBA Action Plan" (12th December).

⁴⁴ According to the European Union definition, a SME is an independent European company employing less than 250 persons and which has an annual turnover not exceeding 50 million euro and/or an annual balance sheet total not exceeding 43 million euro. For a more in-depth analysis see the Commission recommendations issued in 2003 and the related guide to apply the definition (European Commission, 2003; European Commission, 2009c).

- existing one) to reduce their administrative load. In 2009 the European Commission created a 'SME test' (i.e. a cost/benefit analysis) to help national governments to assess if an existing legislation (or a legislative proposal) respects the 'think small first' principle (European Commission, 2009a; European Commission, 2009b; European Commission, 2009d);
4. *Make public administrations responsive to SMEs' needs.* All public administrations should be responsible to SMEs' needs by adopting e-government practices, by improving the quality/cost ratio of public services and by reducing the number of the authorizations needed to start-up a business;
 5. *Facilitate SMEs' participation in public procurement and in public funds supporting SMEs.* The idea is to increase the access to State aids (or to public procurement) and to reduce the duration, the requirements and the complexity of these procedures;
 6. *Create a legal and business environment facilitating the access of SMEs to finance and timely payments in commercial transactions.* In particular, the access to risk capital, micro-credit and other forms of innovative financial instruments are central issue for SMEs;
 7. *Help SMEs to access to the Single Market.* The development of a common European market is an unique possibility for SMEs to develop their business. Therefore, the Commission and the Member States have to spread useful knowledge on this opportunity, to develop a legislation on intellectual property rights and to develop standards and certifications useful to access to a such market;
 8. *Stimulate the innovativeness of SMEs.* This objective can be reached by encouraging the investment in R&D and the participation to national and transnational research programs;
 9. *Enable SMEs to turn environmental challenges into opportunities,* by adopting sustainable production models and encouraging the exploration of business opportunities arising from the request of environmental friendly products;
 10. *Support SMEs to benefit from the growth of markets outside the European Union.*

In February 2011 the Small Business Act was revised to incorporate the new priorities stated in "Europe 2020 Strategy" (European Commission, 2011c). "Europe 2020" is the strategy launched by the Commission to achieve high levels of employment, productivity and social cohesion through more effective investments in education, research, innovation, low-carbon economy and poverty reduction (European Commission, 2013a). The Commission has developed targets on employment,

innovation, education, social inclusion and energy to be reached by 2020⁴⁵. Despite the positive results obtained in implementing the SBA⁴⁶, the intensify in the economic crisis pushed for a further development of the SBA (European Commission, 2011c). First, European legislation has to become even smarter by increasing the use of the "Think Small First" principle and by taking into account the differences between micro, small and medium-sized enterprises while developing new regulations. Following this line of action, the European Commission presented in November 2011 a set of proposals to exempt SMEs from EU legislative requests and to introduce special regimes to minimize regulatory burdens (European Commission, 2011b). Second, an increased attention is devoted to the SMEs' financial needs in order to further facilitate their access to financial resources (including venture capital market), to support timely payments and to facilitate the access to EU structural funds. Third, SMEs have to be encouraged to access to European single market, to take advantage of the growth in foreign markets and to contribute to a resource-efficient economy by implementing an environmental legislation and to access to appropriate funds financing the adoption of new technologies. Finally, European institutions are asked to further promote entrepreneurship by simplifying bankruptcy and business transfer procedures, by reducing startup time and costs and by supporting firm innovativeness. The European Commission clearly manifest its commitment in supporting these five lines of further development while stating:

"To ensure full implementation of the SBA and to respond to the current challenges SMEs are facing, the Commission is determined to continue to give priority to SMEs and to take into account their specific characteristics in its proposals and programmes. Improving the awareness and visibility of actions with national and regional policy makers and other stakeholders will be instrumental in ensuring that the SBA is implemented close to entrepreneurs" (European Commission, 2011c: 18)

One could ask what are the results of these policies on day-by-day European SMEs. This question is relatively simply to ask as, since 2008, the European Commission annually monitors the impact of SBA principles and the overall performance of European SMEs through a document named *The SME Performance Review* (Ecorys, 2011; Ecorys, 2012; Eim, 2008; Eim, 2009; European Commission, 2012; European Commission, 2013c). The Commission also prepares a detailed analysis of each Member State (i.e. a fact sheet) to evaluate national results in implementing SBA and to stimulate the diffusion of goods practices among the Member States (European Commission, 2011c). Based on Eurostat data, the Performance Review highlights that in 2013 SMEs are the 99,8% of non-financial enterprises (20.3 million firms). The main economic data related to these firms are the following:

⁴⁵ These targets are to increase the employment rate to 75% of the working population (20-64 years), to invest the 3% of the EU's GDP in research and development, to limit the greenhouse emissions to 20%, to produce 20% of the energy needs from renewable sources and to reduce the people at risk of poverty below 20 millions.

⁴⁶ According to the SBA Review, all legislative initiatives foreseen by the SBA were adopted with the exception of European Private Company (European Commission, 2011c).

- there are 18.7 million micro firms (i.e. firms that have less than 10 employees) providing more than 37 million of jobs (28,7% of jobs) and more than the 21% of gross value added in non-financial business economy;
- there are 1.3 million small firms (i.e. firms employing between 10 and 49 employees) that provide more than 26 million of jobs (20,5% of jobs) and more than 18,3% of gross value added;
- there are 222.628 medium firms (i.e. firms employing between 50 and 249 employees) that provide more than 22 million of jobs (17,3% of jobs) and more than 18% of gross value added;
- there are 43.454 large firms (i.e. firms employing more than 250 employees) that provide more than 43,7 million of jobs (33,5% of jobs) and more than 42,4% of gross value added.

The *SME Performance Review* for 2012 clearly shows that SMEs were still suffering due to the economic crisis (Ecorys, 2012). While European large firms were able to regain most of the employees and the value added lost after 2008, the same was not true for SMEs. Clearly, some differences existed between SMEs operating in high tech sectors and those operating in more traditional ones (e.g. trade, transports and services). While the former group of firms combined an increase in value added with stable levels of employment, the latter displayed a decrease in both indicators. Moreover, only few European countries were able to surpass (i.e. Austria and Germany) or to reach (i.e. Belgium, France and Finland) the pre-crisis levels⁴⁷. This situation is slowly improving as 2013 is expected to be the first year with a combined increase in both aggregate employment and value added for all small and medium-sized firms, independently from their technological intensity (European Commission, 2013d). Again, some differences seem to emerge. First, SMEs operating in service sector are expected to growth faster than those operating in manufacturing one. Second, SMEs operating in countries that have suffered from the financial and sovereign debt crisis are expected to undergo a slower recovery employment and value added. Despite the impossibility to directly evaluate the effects of the implementation of the SBA principles, it has been claimed that those Members States that have devoted a substantial effort in implementing SBA principles are in a better position to support the competitiveness of their national SMEs (European Commission, 2013c). The *SME Performance Review* for 2013 clearly highlights that:

"Many new policy measures have been implemented or announced to help to improve the performance and competitiveness of SMEs in the EU-28. Nevertheless, the market stakeholders perceive these measures in a

⁴⁷ These results were possible thanks to the presence of high labor productivity, to an increase in internal aggregated demand and to a well-developed knowledge intensive and medium-tech sector (Ecorys, 2012).

different way compared to the policy makers, possibly due to lead-time, poor implementation or the lack of communication. Although most countries have achieved moderate progress in the implementation of new SBA policy measures, there is evidence of a gap between the policy domain and the expectations of SMEs. The market and framework conditions in which SMEs operate are still far from optimal" (European Commission, 2013c: 73)

We now turn to analyze the implementation of SBA principles in Italy to understand what is the current state of the art in developing a more supportive environment for Italian firms.

4.3 The implementation of Small Business Act in Italy

Due to the fact that Italy displayed some retards in the adoption of SBA, in May 2010 the Italian Government issued a national strategy to implement it (Presidenza Del Consiglio Dei Ministri, 2010). This strategy contained a number of short-term priorities and long term guidelines to develop legislative, regulative and administrative actions to support Italian SMEs. For instance, the Italian Government formally committed to write laws and regulations influencing SMEs activities as clearly and simply as possible, to facilitate the access to public tenders in local administration below 5.000 inhabitants, to re-finance the State guarantee fund for SMEs and to facilitate the access to European trademarks and patents. The Italian Government also promised to incentive the formation of green economy startups, the internalization of SMEs and the participation to national and international research programs. Finally, the Italian Government committed to support female entrepreneurship and intra-generation firm transmission. According to the Italian Government, all these initiatives were expected to create 50.000 new jobs and to increase the GDP by 1% between 2010 and 2013 (Presidenza Del Consiglio Dei Ministri, 2010). Nowadays, these goals seem to be so far away. The annual SBA fact sheet highlights that the number of Italian SMEs, the number of jobs they provided and the value-added they create are falling back to the levels of around 2005 (European Commission, 2012; European Commission, 2013b). The data used does not provide a comprehensive picture of Italian economy as it covers industry, construction, trade and service sectors only, while agriculture, forestry, fishing, health care and education sectors are not taken into account (European Commission, 2011a; European Commission, 2012). Despite these limitations, a profound crisis in the Italian firms clearly emerges. This crisis has its roots in the fact that 94% of Italian enterprises have less than 10 employees (i.e. they are micro-firms). These firms provide the 46% of the employment (6.9 million of employees on a total of 15 million) and the 29% of the value added (€ 185 billion on a total of € 620 billion). Similarly, small enterprises are 183.000 (4.9% of Italian enterprises), but they provide the 21,5% of the total employment and the 21,9% of

the value added⁴⁸. Moreover, Italian SMEs operating in medium-to-high manufacturing industries and knowledge-intensive services are below the European Union average⁴⁹. Moreover, Italian micro-enterprises have increasingly lost value added and employments in the period 2003-2010 (European Commission, 2011a). This tendency has been confirmed in 2011 and 2012 (see table 1). By contrast, Italian large firms outperformed SMEs as they have reached pre-crisis levels (European Commission, 2013b).

Table 1 - Number of enterprises, employment and valued added for class of firms in Italy

	Number of enterprises			Employment			Value Added (Billion €)		
	2012	2011	2010	2012	2011	2010	2012	2011	2010
Micro	3.491.826	3.610.090	3.557.818	6.930.947	7.087.214	7.134.461	185	180	213
Small	183.198	184.345	186.027	3.236.764	3.250.491	3.275.667	136	139	153
Medium	19.625	19.370	19.076	1.861.089	1.875.598	1.854.280	101	99	99
SMEs	3.694.288	3.813.805	3.762.921	12.028.799	12.213.303	12.264.408	422	418	465
Large	3.196	3.253	2.904	3.013.012	2.998.619	2.803.386	198	194	187
Total	3.697.484	3.817.058	3.765.825	15.041.812	15.211.922	15.067.794	620	612	652

Source: (European Commission, 2011a; European Commission, 2012; European Commission, 2013b)

In summary, the gradual loss of competitiveness and the huge number of micro-firms are considered the major challenges to the recover of the Italian economy. In addition, micro-enterprises tend to concentrate in low-tech manufacturing sector and in low knowledge-intensive services. Finally, Italian SMEs tend to be less internationalized that their European counterparts due to their small dimension and lack of available resources.

Despite the introduction of a three-year strategy to implement the SBA, in 2011 Italy was underperforming in most of the SBA policy areas (European Commission, 2012). In order to cope with this shortcoming, in less than one year the Italian government issued several policies and legislative reforms containing important measures for SMEs⁵⁰ (European Commission, 2013b). However, Italy still underperforms in the following areas:

- *Entrepreneurship.* Despite an higher self-employment rate than the EU average, there is still poor school education supporting the development of entrepreneurial attitudes and poor intentions to start a new business (or to become self-employed). In addition, the two

⁴⁸ By contrast, the 19.625 medium-sized enterprises (0,5% of Italian enterprises) provide the 12,37% of Italian employment and the 16,2% of the value added, while more than 3.000 large enterprises (0,1% of Italian enterprises) provide the 19,7% of Italian employment and the 31,9% of the value added.

⁴⁹ High-tech manufacturing and knowledge intensive firms contribute to the 28% of the value added of SMEs, while the European average reaches the 32% (European Commission, 2013b).

⁵⁰ These improvements seem to lose momentum as "no initiatives were planned for the first months of 2013 due to the current uncertain political context"(European Commission, 2013b: 5).

indicators directly assessing the entrepreneurial activity (i.e. entrepreneurship rate and entrepreneurial intention) score well-below the EU average;

- *Second chance.* Italy has an higher average cost to recover debtor's estate and weaker support for those entrepreneurs that choose to restart a business after bankruptcy;
- *Responsive administration.* Despite the time required to start a business below the EU average, in 2012 an Italian entrepreneur suffers higher costs to enforce contracts and to start a business, spends more time to comply with the major taxes and is subjected to an higher number of tax payments per year;
- *Access to finance.* Italy has a weak performance in this policy area due to a lower willingness of banks to provide a loan, an higher percentage of loan rejections, a longer duration to get paid, an high financial spread between small and large firms, a lack of strong legal rights and a lower investment of venture capitalists. By contrast, Italy has lower lost payments on the total turnover than the EU average;
- *Single market.* Despite a tendency to transpose the European market legislation more faster than the EU average, Italy still has a huge number of pending directives to be implemented. Moreover, very few Italian SMEs trade in the single market due to the high number of micro-firms that lack of resources to pursue internationalization;
- *Skills and innovation.* Italy shows a performance above EU average in SMEs ability to introduce innovations on products, process, marketing and management. Italian firms are also above the average on in-house innovation and provide more training to their employees. Despite these potentialities, Italian SMEs poorly use e-commerce to sell and purchase goods and services. Moreover, innovative firms underperform in collaboration with other firms and in participation in EU research funds;
- *Internationalization.* A limited percentage of Italian SMEs tend to import and export outside the EU. This underperformance is originated by the low propensity of micro-firms to internationalize and to higher delays in import and export operations. By contrast, the number of documents required in these operations are essentially the same of other EU countries.

Despite these facts, Italy has a good performance in "State aid and procurement" principle: SMEs have higher State aids and levels of participation in public contracts. However, the delay in payments from public authorities is the worst in Europe and the amount of State aids is constantly reducing due to the economic crisis. Similarly, Italy is above the average on the "Environment"

principle as a huge number of SMEs have adopted resources-efficiency measures, offer green products and generate more than 50% of their turnover by selling them.

Despite all these disappointing results, we acknowledge that the Italian Government is developing several good practices to improve the business environment of Italian SMEs. A policy, project or a measure is considered as a 'good practice' if it is introduced by public authorities (national, regional and local) with the aim to implement the principles of SBA, it is innovative and original, it has delivered tangible result and it easily transferable in Europe and it clearly out-perform other practices in terms of efficiency (or substantially improved the SMEs environment). The complete list of good practices is contained in the SBA database⁵¹ and easily accessible by other States that desire to learn and to implement measures that have proved to work in other States. According to the database, until 2012 Italy has listed 58 good practices. For instance, in 2012 the Italian government introduced a new form of limited liability company that could be opened by entrepreneurs under 35 years and a 'zero-bureaucracy' areas in which all the administrative procedures have to be concluded within 30 days. The European Commission consider these initiative as good practices in the "Entrepreneurship" and in the "Responsive administration" principles of SBA (European Commission, 2012).

One of the most promising attempts to support Italian economy is the development of a new form of strategic alliance named 'network contract' (*contratto di rete*). First introduced in the Italian law in 2009, network contract is an agreement to stimulate SMEs to develop their competitiveness without the need to lose their autonomy. The legal framework defines the rules that firms could use to develop common industrial and commercial projects and to reach enough financial resources to realize them. The reasons that have convinced the Italian Government to develop this new legal framework clearly emerge in a communication to the European Commission:

"all companies in Italy, but especially SME, are reluctant to cooperate, given that there is no effective and simple legal form of cooperation, allowing carrying out common activities (or other forms of cooperation) within a pre-defined legal framework. The Italian legal system does not currently provide for any form of multilateral for-profit contract without the setting up of a specific fund in which all the profits flow. [...] This measure was strongly demanded by Italian companies and their associations and responds to the specific structure of the Italian industry, characterized by the existence of numerous and small individually-owned companies, willing to cooperate while maintaining their independence "(European Commission, 2011d: 2)

Since the approval of the national strategy to implement the SBA in 2010, the diffusion of the network contract has been considered a priority by the Italian Government (Presidenza Del Consiglio Dei Ministri, 2010). In order to increase its diffusion, the Italian Government introduced

⁵¹ The database could be freely accessed here:

<http://ec.europa.eu/enterprise/policies/sme/best-practices/database/SBA/index.cfm?fuseaction=welcome.detail>

a treatment of favor in the assignment of State and Regional incentives for entrepreneurship⁵². In August 2010 the Italian Economic Minister also proposed the adoption of a EU legislative framework to introduce the "European Network Contract" (*Contratto di Rete Europeo*) based on Italian experience to stimulate cross-border economic relations (Ministero Dello Sviluppo Economico, 2010). In November 2013, the SBA fact sheet still considered network contract legislation as the most representative 'best practice' in the country (European Commission, 2013b). In the next sections we'll provide an in depth discussion of the characteristics of the contract and on the evolution of the legislation. In doing so, we combine the legislation and the theoretical insights elaborated by the growing body of literature on the theme.

4.4 Network contract

Despite the fact that network contract is classified as a good practice, we claim that the legislative framework is poorly debated and understood outside the Italian territory. We support this view with two arguments. First, the European Commission classifies network contract under different SBA pillars. In Appendix of the *Review of the Small Business Act* in 2010 the Commission considers the contract as an Italian best practice useful to develop the skills and innovations of SMEs (Principle 8 of the SBA)⁵³. By contrast, in 2011 the European Commission classifies it under the "Entrepreneurship" pillar (principle 1 of the SBA) thanks to the fiscal and economic advantages granted by the Italian Government⁵⁴. Finally, in the SBA Database, the network contract is classified in the principle named "Better public administration - cutting the red tape" (principle 4 of the SBA)⁵⁵. In this case the emphasis is both on the possibility to access to funds and on the

⁵² The document clearly states: "Su quest'ultimo aspetto, in considerazione della piccola dimensione di molte imprese italiane che spesso non favorisce il conseguimento di economie di scala sufficienti alla realizzazione di obiettivi strategici per le stesse aziende, sviluppare la cultura di operare in rete deve rappresentare una priorità strategica la cui operatività vedrà nell'utilizzo del «Contratto di rete», così come definito dall'art. 1, della legge n. 99 del 2009, uno strumento molto efficace. In particolare, sarebbe auspicabile l'introduzione di specifiche incentivazioni, favorendo e premiando il ricorso al «contratto di rete» nella predisposizione di bandi per l'utilizzo di risorse statali e delle Regioni destinate alle imprese, nel rispetto delle norme nazionali e comunitarie in materia di appalti" (Presidenza Del Consiglio Dei Ministri, 2010).

⁵³ While discussing the examples of good practices, it is stated "In order to encourage the networking of innovative SMEs, a law was adopted in July 2010 ruling companies' networks and providing those networks with fiscal, administrative and financial incentive" (European Commission, 2011c).

⁵⁴ "In July 2010, fiscal advantages were approved to stimulate the creation of SME networks. The payment of profit taxes(not higher than € 1 million) is delayed by three years if profits are reinvested in the network's activities. Finally, also in 2010, the Ministry of Economy issued a decree implementing a set of fiscal incentives (€ 48 million for 2011-2013) geared towards 'network business contracts' "(European Commission, 2011a).

⁵⁵ In the database the practice has the following description:"With the network contract, two or more businesses undertake to jointly carry out one or more economic activities within the scope of their respective business purposes in order to increase mutual innovativeness and competitiveness on the market. The contract is drafted by public deed or by an authenticated private document and must indicate: a) the name, firm, commercial name of the members of the network; b) a description of the strategic objectives; c) identification of a network programme; d) the duration and terms of membership of the contract; e) the joint body responsible for carrying out the contract. Businesses belonging to the

simplification in the authorization procedures. In synthesis, a little confusion seems to emerge on the role of the network contract in supporting Italian SMEs. Second, there is a lack of knowledge sharing on the topic outside Italy. Admittedly, since 2009 a vast literature was developed to understand the distinctive elements of network contract compared to other contractual forms (Cafaggi, 2010; Corapi, 2010; Iamiceli, 2009b; Marasà, 2010; Mosco, 2010; Scarpa, 2010a; Villa, 2010), its influence on the commercial law (Borroni and Sala, 2012; Cafaggi, 2009b; Cafaggi, 2011b; Donativi, 2011; Granieri, 2009; Maltoni, 2011; Scognamiglio and Macario, 2009; Zanelli, 2010) and its implications for further legislative reforms (Briganti, 2010; Brondi, 2009; Cafaggi, 2009a; Cafaggi, 2011a; Camardi, 2009; Romano, 2012; Scognamiglio and Macario, 2009). Moreover, numerous studies analyzed the contractual clauses to help Italian notaries, lawyers and consultants to correctly apply the legal framework (Bonazza and Bonazza, 2011; Cirianni, 2010; Di Lizia, 2012; Di Pace, 2011; Gallo, 2012; Gentili, 2011; Magnante, 2010; Maugeri, 2009a; Maugeri, 2009b; Tripputi, 2011; Vettori, 2009). Finally, other contributions focus on the role of accounting practices in network contracts (Cardoni, 2012; Cerato, 2011a), on the role of financial aspects (Aip, 2011; Iamiceli, 2009a) and on the fiscal benefits that may arise when adopting a network contract (Bargagli, 2011a; Bargagli, 2011b; Cerato, 2011c; Giordano, 2011; Mariotti, 2011; Pagamici, 2011; Scarpa, 2010b; Tassani, 2011). However, the vast majority of these contributions are written in Italian and they can be understood by only non-Italian readers. In order to partially fulfill this gap, we'll now turn our attention to understand the main features of network contracts.

The Italian legislation defines a network contract as an agreement between two (or more) firms that cooperate on purely a contractual basis to jointly increase their competitiveness and innovation abilities. All parties could benefit from these activities either at firm or at network level. In the former case a partner directly obtains an improvement in its competitiveness (or its innovativeness), while in the latter firms contribute to improve the competitiveness of the entire network. It is interesting to note that firms remain autonomous and independent as they cooperate only to meet the common objectives stated in the contractual agreement. Despite the misleading translation of the Italian term "*contratto di rete*", the definition and the aim of the agreement seems to well fit the purposes of a strategic contractual alliance.

network can access funding through the requesting company, which operates as a multi-mandated agent with regard to the authorities. All simplification tools available (including IT tools) are employed and applications for authorization are submitted to Chambers of Commerce or the OSS where appropriate" (Source: SBA - Database of good practices. Accessed on 12th March 2013). It is also claimed that: " the aim is to enable SMEs to increase their critical mass and gain greater bargaining power in the market, while retaining their legal personality and autonomy"(Source: SBA - Database of good practices. Accessed on 12th March 2013).

The legislation states that common objectives could be reached alternatively with three degrees of cooperation:

1. *the mere exchange of information and activities on industrial, commercial or technological issues.* The aim is to exchange information and knowhow in order to increase competitive advantage. This form of cooperation is the simpler and reasonably it does not involve the use of any special fund or coordination organ (Vecchiato and Ceretta, 2012);
2. *the coordination of firms' complementary activities in order to reach the agreed strategic objectives.* This cooperation is particularly suitable to regulate stable relationships in supply chains by integrating the activities of diverse firms or by sharing common standards of production (Bentivogli et al., 2013);
3. *the effective joint exercise of activities.* For instance, firms choosing this option could realize together research and development activities, common logistical platforms or coordinated supply activities (Bentivogli et al., 2013; Iamiceli, 2009b).

In contrast to other cooperative agreements, network contract offers a more flexible cooperation with limited rules to ensure transparency and stability in the contractual relation (European Commission, 2011d). As a matter of facts, the legislation only defines the compulsory and optional elements needed to set up a valid contractual agreement. In other words, firms stipulating a network contract are free to determine the clauses according to their specific coordination needs.

The main features of network contract could be summarized as follows:

- a network contract can be signed by a single entrepreneur and by companies operating in agriculture, industrial, commercial and service sectors. By contrast, professional consultants and public administrations are not allowed to be part of the agreement;
- network contracts can be set up among firms operating in the same sector or in different sectors. The agreement should be at least bilateral and parties can indicate the conditions at which other firms might subsequently join it. A network contract could be signed between European firms;
- a contract has to be drawn up by the parties before a notary (i.e. official deed), certified as authentic by a notary (i.e. authenticated private deed) or stipulated using a digitally signed act (or an electronic signature authenticated by a notary). A copy of the contract has to be registered at the local Business Register where the parties have their headquarters in order to ensure the existence of the agreement;
- firms have to clearly define the joint strategic goals, the activities needed to achieve them and the duration of the contract. The activities, the rights and the duties of the partners are

contained in the "network program" (*programma di rete*). Firms stipulating the contract could assign these rights and duties without the need to follow the rule of proportionality between the rights and the contributions (Aip, 2011);

- the contract has to contain criteria to measure the achievement of the agreed strategic goals. The legislation gives the parties the freedom to choose these criteria, only suggesting that they must be as concrete and precise as possible. The criteria could refer to strategic goals of networks or individual firms. Moreover, both qualitative (e.g. improvement in customer satisfaction) and quantitative measures (e.g. improvement in the firms sales) could be used;
- firms have the freedom to create the governance structure they desire to coordinate the network. This coordination structure (*organo comune*) is entrusted to verify the achievement of the common goals. The contract has to specify the managerial powers of the organ, the voting rules needed to elect it and the rules to solve the contrasts among them;
- the firms can create a special fund (*fondo comune*). Firms have to contribute to this fund according to the contractual provisions. These resources are bounded for the entire period of the contract in order to reach strategic objectives⁵⁶. The special fund allows the firms to obtain some fiscal benefits and, if the network has a coordination organ, it grants limited liability for debts undertaken to reach the common strategic objectives.

4.5 The evolution of the legislation of network contract

The legislation on network contract has been subjected to several changes between 2009 and 2012. In order to systematically discuss these modifications, we'll divide the evolution of the legislation in several phases: early formulations (Law 133/2008 and Law 33/2009), development phase in which the applicability of network contracts was extended (Law 99/2009 and Law 122/2010) and finally the latest efforts in clarifying the legislation (Law 134/2012, Law 221/2012 and Law 224/2012).

4.5.1 Early formulations: from Law 133/2008 to Law 33/2009

The idea to support networks of SMEs first appeared in the article 6-bis of the Law 133/2008. The article simply stated that the Italian Ministries of Treasury (*Ministero dell'Economia e delle Finanze - MEF*) and Economic Development (*Ministero dello Sviluppo Economico - MISE*) had to develop a set of criteria to identify networks of Italian firms to which confer a legal status. In order to incentive the formation of such networks, the Law allowed the possibility to access to some administrative, financial and fiscal incentives.

⁵⁶ It is important to note that the legislation does not provide any indication on the type of assets that could be included in the special fund.

Following this early formulation, network contract was introduced in the Law 33/2009⁵⁷. The aim of the Law was to introduce urgent measures to support the Italian industrial sector suffering due to the economic crisis. The Law simply specified the aim of the contract (i.e. to increase the innovation abilities and the competitiveness of the firms cooperating on purely a contractual basis), the requested legal form (i.e. official or authenticated private deed), the content of the contract (i.e. the firms stipulating the contract, the common activities to realize, the activities needed to reach them, the right of withdrawal, the duration of the contract and the coordination structure) and the duty to register the agreement at the local Business Register where the parties have their headquarters⁵⁸. The Law also stated that network contracts could access to the same fiscal, administrative and financial advantages assigned to industrial districts.

It is important to note that this early formulation soon rose the interest among lawyers (Iamiceli, 2009b). A great effort was devoted to collocate the new contractual form in the Italian commercial law (Cafaggi, 2009a; Cafaggi, 2009b; Granieri, 2009; Scognamiglio, 2009; Scognamiglio and Macario, 2009), to understand how coordination among firms could improve thanks to the use of this agreement (Aip, 2008; Aip, 2009; Brondi, 2009; Macario, 2009; Maugeri, 2009a; Maugeri, 2009b; Vettori, 2009) and to understand the further legislative steps to better support the cooperation among Italian SMEs (Cafaggi and Iamiceli, 2009; Camardi, 2009).

4.5.2 Extending the applicability of network contract: Law 99/2009 and Law 122/2010

The legislation on network contract was soon modified by Law 99/2009. While in the previous formulation network contract could be used only by public limited liabilities companies, the Italian Government extended its applicability to sole entrepreneurs and to companies operating in agriculture, industrial, commercial and service sectors. Moreover, it added the possibility for other firms to join the contract after it is signed. The object of the contract was better specified by substituting the generic expression 'common activities to realized together' with the obligation to indicate the precise strategic objectives to be reached in the agreement and the criteria used to measure them. Moreover, the legal personality of the network was recognized (i.e. the rights and obligations of the network were considered separate from those of the partners) by recalling the discipline on consortium⁵⁹ (i.e. a group of independent companies working together for the

⁵⁷ Law 33/2009 was converting the Legislative Decree 5/2009. The Legislative Decree was called "Incentive Decree" (*Decreto incentivi*) due to the fact that contained a number of stimulus for the Italian economy.

⁵⁸ It has been argued that this duty arises from the need to identify the firms accessing to the incentives (Santagata, 2011).

⁵⁹ The Law explicitly recalls the articles 2614 and 2615 of the Italian Civil Code. According to these articles, the parts stipulating the contract could not divide the value of the special fund for the entire duration of the contract. Moreover, the network special fund becomes autonomous from the holdings of each firm. That means that if a firm goes bankrupt, than its creditors could not claim any legal action against the special fund to recover the value of their

fulfillment of a specific project). Simply speaking, before Law 99/2009 the firms stipulating a network contract had an unlimited and jointly liability for the debts of the network. Moreover, Law 99/2009 introduced the possibility for the coordination structure of the network (*organo comune*) to act on behalf of the firms in those procedures aimed at developing the local economy with the support of public administrations. Finally, Italian Regions were allowed to create specific financial incentives supporting the creation of network agreements.

Law 122/2010 went a step further as it introduced some important innovations in the discipline. For the first time the legislation stated that the firms could reach the strategic objectives by cooperating in their field of activities, by exchanging relevant information or by exercising common activities. However, to us the two most innovative elements introduced by Law 122/2010 were the optional clauses and the fiscal advantage. The former element allowed the stipulation of the contract without the special fund (i.e. *fondo comune*) to reach the strategic objectives. The obligation to constitute a coordination structure for the network (i.e. *organo comune*) was also removed. Therefore, both the special fund and the coordination organ become optional clauses rather than compulsory ones. The latter element allowed partners to postpone part of their taxable profits for the duration of the contract. These funds could be used to purchase new assets (tangible and intangible), services and workforce needed to realize the network program. This tax advantage is temporary as the postponed profit will be again included in the computation of firms' taxes if the contract is fulfilled, if a firm chooses to withdrawal or if it distributes profits arising from the fiscal advantage. On this basis, some lawyers correctly asserted that a network without a special fund cannot access to the fiscal advantage (Santagata, 2011). The Italian Government stated that the fiscal incentive had a limited duration (from 31 July 2010 to 31 December 2013) and each firm could postpone profits for a maximum of € 1 million⁶⁰. Due to the fact that the described fiscal advantage was potentially in contrast with the European legislation on State aids, its applicability was subjected to a stand clause. In 2011 the European Commission finally decided that the fiscal advantage was not against the competition in a free market (European Commission, 2011d).

Due to the profound changes introduced by the Law 122/2010, three alternative interpretations on the scope of network contract emerged (Consiglio Nazionale Del Notariato, 2011; Gentili, 2011;

credits. Similarly, the creditors of the network have to limit their claims to the value of the special fund of the network. The only exception to this rule is when the network coordination organ stipulates a contract on the behalf of the firms rather than for the network itself.

⁶⁰ The Italian Government also fixed an overall maximum financial cover of € 20 million for 2011, € 14 million for 2012 and € 14 million for 2013. If the requests are superior to the stated financial covers, the incentive will be proportionally reduced (Agenzia Delle Entrate, 2011a; Agenzia Delle Entrate, 2011b). For instance, in 2011 the fiscal advantage was the 75% of the postponed profits because the requests reached € 26 million with a maximum financial cover of only € 20 million (Agenzia Delle Entrate, 2012). In 2012, more than € 16 million were asked with a maximum financial cover of € 14 million, allowing each firm to postpone the 86,5% of the profits (Agenzia Delle Entrate, 2013b).

Maltoni, 2011; Retimpresa, 2012; Santagata, 2011). First, the network contract is simply a new model to collaborate that integrate already existing contracts (such as consortia or Temporary Association of Firms) (Maltoni, 2011). Second, network contract legislation aggregates other contractual forms that previously help firms to cooperate, allowing them to better discipline and govern their activities (Cafaggi, 2011b). Third, network contract is a contractual form allowing to entrepreneurs to access to national and regional incentives, to fiscal benefits, to financial resources and to administrative simplifications. In other words, the contract allows the public and the financial sector deliver to collaborative firms some benefits otherwise precluded. In addition, there was still an interest on how the legislation could answer to some structural deficiencies of Italian SMEs (Bargagli, 2011a; Briganti, 2010; Cafaggi, 2010; Cafaggi, 2011b; Di Pace, 2011; Travaglini, 2011; Zanelli, 2010) and the differences with other legal frameworks present in the Italian commercial law (Bonazza and Bonazza, 2011; Di Sapio, 2011; Donativi, 2011; Marasà, 2010; Mosco, 2010; Villa, 2010). Practitioners began to show an increasing interest on the accounting, financial and governance aspects (Aip, 2011; Cardoni, 2012; Cerato, 2011a; Cerato, 2011b; Giordano, 2011; Iamiceli, 2009a; Magnante, 2010; Tafuro, 2011; Travaglini, 2011). However, the fiscal incentive and the possibility to limit the liability of the firms boosted the development of a large literature on the benefits of stipulating a network contract (Bargagli, 2011a; Bargagli, 2011b; Cerato, 2011c; Mariotti, 2011; Pagamici, 2011; Scarpa, 2010a; Scarpa, 2010b; Tassani, 2011).

4.5.3 Clarifying the legislation: Law 134/2012, Law 221/2012 and Law 224/2012

In 2012 the Italian Government chose to further stimulate the diffusion of network contract by introducing some elements of standardization. Law 134/2012 stated the possibility to use a digitally signed act (or an electronic signature authenticated by a notary) instead of an official deed or an authenticated private deed. In addition, the Law introduced a 'standardized' network contract in order to guide the entrepreneurs in stipulating the agreement and a simplified procedure to enroll contractual modifications in the business register⁶¹. Law 134/2012 also tried to differentiate the legislation according to the combination of optional clauses. Since Law 33/2009, entrepreneurs had the possibility to opt for a network contract with a coordination structure and a special fund or without both of these elements. The former agreement was conceptually similar to a limited liability company, while the latter to a contractual strategic alliance. Therefore, Italian authorities decided to differentiate these two options by stating that:

⁶¹ The simplification is the possibility to enroll the change in only one Chamber of Commerce, without the need to communicate the change to all the Chamber of Commerce in which the firms that are part of the network operates.

- i. the network contracts constituted with both a coordination structure and a special fund* have to prepare an annual balance sheet following the same rules for limited liability companies. This balance sheet has to be published in the Chamber of Commerce. Moreover, the liability for the obligations stipulated by the coordination organ to reach the strategic objectives is limited to the value of the special fund;
- ii. the network contracts constituted without coordination structure or special fund* did not have any requirements.

It is important to note that the Law did not clearly relate this distinction with the legal personality of the network. Formally, the legal personality could be acquired only if the contract is enrolled in the ordinary section of the Business Registry. However, the limited liability and the duty to publish a annual balance sheet were related not to this enrolment, but to the co-presence of the optional elements of the contract (i.e. the coordination structure and the special fund). Moreover, the Law did not provide any further information on the fiscal and commercial regulation disciplining this latter type of agreements. As a consequence, several contributions discussed how this legal ambiguity could influence the validity of network contracts, the fiscal advantages and the limited liability of the contract (Borroni and Sala, 2012; Di Lizia, 2012; Gallo, 2012; Mariotti, 2012; Sciuto, 2012). In extreme summary, the critics moved to Law 134/2012 claimed that the possibility to acquire legal personality was in contrast with the original idea to develop a pure contractual agreement. Network contract was initially developed as a contractual strategic alliance that well suited the request of Italian SMEs to a legal framework capable to grant both the autonomy and the possibility to cooperate with limited legislative requests.

In order to clarify these ambiguities, after few months the Italian Government issued a revised version of the legislation through Law 221/2012. We admit that this Law made an effort to resolve several open points in the legislation. First, following the favourable opinion of the Italian authority for public procurement (*Autorità per la vigilanza sui contratti pubblici*)⁶² network could now participate to tenders and procurements in public sector. Second, the Law clarified that the contracts do not exclude the insurance contracts used in the agricultural sector to stabilize the incomes through a mutuality fund. Finally, the Law stated that a network contract constituted with a coordination structure and a special fund did not automatically acquire legal personality. This decision is coherent with the request of the European Commission in which the fiscal advantage is

⁶² Following an on-line public consultation open to all Italian firms, the Authority suggested to extend the possibility to participate in public procurement in September 2012 (Autorità Di Vigilanza Sui Contratti Pubblici, 2012). In 2013 the Authority also developed some guidelines in order to help SMEs to stipulate a contract fitting the features to participate in a public tender (Autorità Di Vigilanza Sui Contratti Pubblici, 2013a; Autorità Di Vigilanza Sui Contratti Pubblici, 2013b).

considered a State aid only if the beneficiary has legal personality (European Commission, 2011d). Therefore, the legal personality could be acquired only if the entrepreneurs declare this choice, they sign the contract using a official deed, an authenticated private deed or a digitally signed act (i.e. a network constituted using an electronic signature authenticated by a notary could not acquire legal personality) and they enroll the contract in the ordinary section of the Business Register. The acquisition of legal personality has important consequences for the firms that choose this solution:

- the coordination organ acts on behalf of the network rather than on behalf of the participants. By contrast, in a network without legal personality the coordination organ acts on behalf of the firms that has signed the agreement;
- the special fund is distinct from the assets belonging to the firms. By contrast, the absence of legal personality implies that the assets in the special fund remain in the property of the firms that have signed the contract. In other words, the assets in the special fund are only formally separated from those belonging to the partners (i.e. there is only a legal distinction while in everyday activities they are mixed);
- a network with both special fund and coordination organ has to prepare an annual balance sheet and it has a limited liability independently from its legal personality;
- in June 2013 the Italian Income Revenue Authority (*Agenzia delle Entrate*) has stated that network contracts with legal personality (*reti-soggetto*) exercising for-profit activities are autonomous entities subject to taxation and have to follow the related obligations (Agenzia Delle Entrate, 2013a)⁶³. This obligation also applies to those networks with legal personality created for not-for-profit that exercise some limited for-profit initiatives;
- the firms stipulating a network contact with special fund and legal personality are not allowed to postpone part of their taxable profits for the duration of the agreement (i.e. they could not access to the fiscal incentive) (Agenzia Delle Entrate, 2013a).

Recently the legislation has been emended by the Law 224/2012 that introduced an additional incentive. According to this Law, a tax credit was introduced for those networks that directly invest in R&D or assign research activities to universities (or other research centers). In other words, network contracts could access to the same fiscal advantage recognized by the Law 228/2012 to Italian firms that decide to invest in in-housed or outsourced research activities.

The legislative evolution in 2012 has further stimulated academic attention on the theme. Scholars seem to be particularly interested in the competitive advantages (Alberti, 2012; Bentivogli et al.,

⁶³ Similarly, network contracts with legal personality exercising not-for-profit activities are subjected to the taxation discipline provided for Italian not-for-profit entities.

2013; Bubbio et al., 2013; Di Diego and Micozzi, 2013; Ghera, 2013; Romano, 2012), in the measurement of the value created (Formisano et al., 2013; Lombardi, 2012; Vecchiato and Ceretta, 2012) and in the fiscal advantages (Borroni and Sala, 2012; Ferrario and Scappini, 2013; Mariotti, 2013a; Mariotti, 2013b). Table 2 synthesizes the evolution of the network contract legislation, highlighting in bold the innovative elements introduced by each law.

Table 2 - The evolution of the discipline on network contracts (innovations are in bold)

	Law 33/2009	Law 99/2009	Law 122/2010	Law 134/2012	Law 121/2012	Law 224/2012
Requested legal form	- Official deed - Authenticated private deed	- Official deed - Authenticated private deed	- Official deed - Authenticated private deed	- Official deed - Authenticated private deed - Digitally signed act	- Official deed - Authenticated private deed - Digitally signed act	- Official deed - Authenticated private deed - Digitally signed act
Requirements for the existence of the contract	Registration in Business Register	Registration in Business Register	Registration in Business Register	Registration in Business Register - Standardized contract	Registration in Business Register - Standardized contract	Registration in Business Register - Standardized contract
Applicability of the contract	Limited liability companies	Single entrepreneurs and all companies	Single entrepreneurs and companies	Single entrepreneurs and companies	Single entrepreneurs and companies	Single entrepreneurs and companies
Legal personality of the network	No	Yes	Yes	Optional	Optional	Optional
Compulsory contractual elements	- Partner firms - Common activities to realize - Activities needed to reach these objectives (programma di rete) - Right to withdrawal - Duration of the contract - Coordination structure (organo comune) - Resources bounded in a special fund (fondo comune)	- Partner firms - Strategic objectives - Measures of performance - Activities needed (programma di rete) - New firms could join the contract after it is signed - Right to withdrawal - Duration of the contract - Coordination structure (organo comune) - Resources bounded in a special fund (fondo comune)	- Partner firms - Strategic objectives - Measures of performance - Different degrees of cooperation - Activities needed (programma di rete) - Duration of the contract	- Partner firms - Strategic objectives - Measures of performance - Different degrees of cooperation - Activities needed (programma di rete) - Duration of the contract - Balance sheet and limited liability to the value in the special fund* - Network name and registered address**	- Partner firms - Strategic objectives - Measures of performance - Different degrees of cooperation - Activities needed (programma di rete) - Duration of the contract - Balance sheet and limited liability to the value in the social fund* - Network name and registered address**	- Partner firms - Strategic objectives - Measures of performance - Different degrees of cooperation - Activities needed (programma di rete) - Duration of the contract - Balance sheet and limited liability to the value in the social fund * - Network name and registered address**
Optional contractual elements	/	/	- Right to withdrawal - Resources bounded in a special fund (fondo comune) - Coordination structure (organo comune)	- Right to withdrawal - Resources bounded in a special fund (fondo comune) - Coordination structure (organo comune)	- Right to withdrawal - Resources bounded in a special fund (fondo comune) - Coordination structure (organo comune)	- Right to withdrawal - Resources bounded in a special fund (fondo comune) - Coordination structure (organo comune)
Incentives	- Similar to industrial districts	- Similar to industrial districts - Coordination organ could act on behalf of the firms	- Coordination organ could act on behalf of the firms - Fiscal advantage	- Coordination organ could act on behalf of the firms - Fiscal advantage	- Coordination organ could act on behalf of the firms - Fiscal advantage - Participate to public tenders	- Coordination organ could act on behalf of the firms - Fiscal advantage - Participate to public tenders - Access to tax credit for R&D
*: Only if the contract has a special fund and a coordination structure						
**: Only in presence of the special fund						

Source: own elaboration

4.6 Network contract and other cooperation forms in Italian legislation

In this section we'll compare network contract with other cooperative agreements in Italian commercial law (i.e. consortia, Temporary Association of Firms, European Economic Interest Group and related bilateral contracts). We claim that network contract is only the newest form of cooperation issued by the Italian government. However, 'the newest' does not necessarily mean 'the best'. Therefore, we want to understand the comparative advantages and disadvantages that network contract could grant to adopters.

Due to the fact entrepreneurs could combine several optional clauses (i.e. special fund, coordination organ, legal personality), it will be misleading to think to network contract as a standardized contractual form. For instance a network contract with special fund and legal personality is very similar to a newly constituted limited liability company, while an agreement without them is similar to a contractual alliance. In order to provide a meaningful comparison with other forms of cooperation, we argue that it is more correct to think to a network contract as a "modular agreement" (i.e. an agreement that could be customized combining different elements). These elements are the optional contractual clauses that entrepreneurs could choose to reach their strategic objectives. By combining these three clauses, we identify five types of network contracts (see table 3). As clearly emerged from the discussion of the legislation, some combinations of clauses lead to limits in the contractual freedom as:

- only network contracts with special fund could access to the fiscal advantage. However, if a network contract with special funds acquires legal personality it cannot access to the fiscal advantage as it constitutes a potential State aid⁶⁴;
- only network contracts with both special fund and coordination organ acquire the limited liability and have to prepare an annual balance sheet following the same rules for other limited liability companies. The balance sheet has to be published in the Chamber of Commerce;
- network contracts with legal personality exercising for-profit activities have to follow the same accounting obligations for other for-profit entities in Italy (e.g. double-book keeping accounting, accounting books).

⁶⁴ Until 18th June 2013 entrepreneurs signing a network contracts with special fund and legal personality were clearly warned that the fiscal advantage could be lost.

Table 3 - Different type of network contracts

Type of contract	Optional contractual clauses			Characteristics of the agreement	Consequences		
	Legal personality	Special fund	Coordination organ		Fiscal Advantage	Limited liability	Accounting Obligations
Type 1	X	X	X	New autonomous entity with governance structure and limited liability	No	Yes	Yes
Type 2			X	Contractual relation with autonomous governance structure	No	No	No
Type 3		X		Contractual relation with special fund	Yes	No	No
Type 4		X	X	Contractual relation with special fund and autonomous governance structure	Yes	Yes	Yes
Type 5				Pure contractual relation	No	No	No

Source: Own elaboration

After this clarification, we'll now turn to discuss the most diffused cooperation forms among Italian SMEs. Then, we provide a schema summarizing the comparative advantages and disadvantages in choosing a network contract rather than other cooperation forms.

4.6.1 Consortium with internal relevance

Generally speaking a business consortium is a contract among two or more entrepreneurs creating a common organization to jointly realize a specific phase of their economic activities⁶⁵. As a result, members directly take advantage from the common activities realized by the consortium while they remain legally independent (Corapi, 2010). In doing so, entrepreneurs could choose two distinct organizational solutions:

1. *simply discipline the common activities*. In this case the aim is to regulate the common activities and to verify the respect of the agreed clauses. Due to the fact that the common discipline is relevant only for the parties involved in the agreement, this solution could be labeled as a 'consortium with internal relevance';
2. *jointly realize the common activities*. This organizational solution allows to truly integrate the activities of the firms by creating a common office that act on behalf of them. In this case, the solution could be defined as a 'consortium with external relevance'.

The former agreement is discussed in this sub-section, while the latter in the following sub-section. As previously discussed, in a consortium with internal relevance firms create an organization to regulate some of their common activities. For instance, SMEs could choose to stipulate a consortium with internal relevance to coordinate their R&D or distribution activities to lower the related costs or to develop common quality standards shared by participants.

⁶⁵ The general discipline of consortia is contained in articles 2062-2611 of Italian Civil Code. This general discipline could be modified by special laws related to specific areas or activities.

In order to be valid, a contract creating a consortium has to contain the common activity (or the shared activities), the duration of the agreement, the causes of withdrawal and exclusion, the duties of the firms (e.g. firms commit themselves to allow the quality control on their products) and the powers of the consortium organs. Besides these compulsory elements, firms could indicate the amount of contributions to cover the costs coming from the common activities⁶⁶, the rules of admission of new partners and the termination clauses. The Civil Code introduces some limits to this contractual freedom by stating that:

- the basic organs are the assembly of members and the directive organ. The former organ takes the decisions regarding the joint activities⁶⁷, while the latter has the function to control and verify that all members respect their duties and obligations. Parts are free to define the composition, the criteria and the rules that regulate the functioning of the directive organ;
- if one member sold its participation in the consortium, other members could decide to exclude the new holder;
- the contract compulsory ends when the duration (or the objective of the contract) is reached. The agreement could also be ended with the unanimous decision of the parts.

In summary, the consortium with internal relevance gives an extreme freedom to entrepreneurs to define the content of their cooperation. However, such agreement has only a coordination purpose and it could not have relations with third parties. These limits are overcome in a consortium with external relevance.

4.6.2 Consortium with external relevance

The executive organ of a consortium with external relevance has the power to act on behalf of the member firms. Simply speaking, the executive organ can act and enter in business relations as an autonomous firm following the directives of the assembly of the consortium. However, the aim of this agreement is not to realize a profit, but to obtain some advantages from the cooperation that will be shared among participants (e.g. the reduction of costs that could be reached by ordering a greater number of items). A consortium with external relevance has essentially the same discipline of a consortium with internal relevance, with the following exceptions⁶⁸:

- the registered address of the common office (i.e. the executive organ) has to be indicated in the contract;

⁶⁶ If the contract does not include this clause, Italian law states that the firms have to follow the general discipline of the mandate. As a result, mandatory firms have to anticipate the cost related to the common activities.

⁶⁷ The decisions are taken by the majority of the members, even though parts can agree to use different decision rules.

⁶⁸ This special discipline is contained in the articles 2612, 2613, 2615, 2615 and 2615bis of the Italian Civil Code.

- an extract of the contract has to be registered in the local Business Register where the common office has its registered address. This extract has to contain several relevant information for those firms that desire to enter in business relation with the consortium;
- the executive organ has an autonomous fund that is clearly distinct from the belongings of the member firms. Member firms could not divide the value of the special fund for the entire duration of the contract. Moreover, if a member goes bankruptcy its creditors could not claim any legal action against the special fund. Similarly, the creditors of the consortium have to limit their claims to the value of the special fund. The only exception to this rule is when the organ stipulates a contract on the behalf of the firms rather than for the consortium itself;
- this consortium has the duty to publish a annual balance sheet following the same rules for limited liability companies. This balance sheet has to be published in the Chamber of Commerce. The consortium with external relevance has also to respect some accounting obligations fixed by law.

In brief, in order to jointly realize the common activities a consortium with external relevance has an autonomous fund that limit the liability of its members. Moreover, its executive organ could act on behalf of its members following the directives of the assembly of the members.

4.6.3 Limited liability consortium (*società consortile*)

The Italian Civil Code allows entrepreneurs to create a limited liability consortium. Simply speaking, a general partnership, a limited partnerships or a limited liability company can be created not to make profits, but to obtain a mutual advantage by jointly realizing a specific phase of their economic activities (e.g. cost reduction for all partners). The Civil Code provides a limited description of this legal form⁶⁹ because it adopts the discipline of the underlying societal form. As a consequence, the following compulsory rules apply in a limited liability consortium:

- a consortium based on a limited liability company has the same organs and the related powers, the same value of minimum equity of € 120.000, the same discipline on the nature of contribution and the same limited liability. For instance, the limited liability would apply even if the limited liability consortium stipulates a contract on the behalf of the parts⁷⁰ (Santagata, 2011);

⁶⁹ The discipline is contained in the article 2615ter of the Italian Civil Code.

⁷⁰ As previously discussed, in a consortium with external relevance the parts are also responsible for this type of obligations as the limited liability rule does not apply.

- in a consortium based on a limited partnership the limited liability rule also applies. However, this legal form grants higher degree of freedom due to the more flexible discipline on contributions (i.e. firm partners could contribute with goods, services, money and labor) and the possibility to exclude a partner on the basis of its characteristics, to define the power of the governance organs and to attribute special rights (e.g. a partner could have veto rights on particular decisions) (Aip, 2011);
- in a consortium based on a general partnership the rule of limited liability does not apply (i.e. the parts are full responsible for the obligations of the consortium), the firm partners could contribute to the limited liability consortium with goods, money and even labor and each partner is an administrator of the society (even though the partners could decide otherwise).

We want to point out that the discussed characteristics could be easily assimilated to limited partnerships and limited liability companies whose partners are other limited partnerships or limited liability companies. Clearly, in this case the objective is to make profits.

4.6.4 European Economic Interest Group (EEIG)

In 1985 the European Community introduced the European Economic of Interest Group (EEIG) to help firms operating in different Member States to cooperate across borders. Individual entrepreneurs, practitioners, companies, firms and other legal public and private entities could constitute a EEIG to jointly realize activities to improve their economic results. There are several request to constitute this legal form:

- I. at least two members of the Group have to come from different Member States;
- II. the contract constituting a Group must include its name, its objectives, its official address, its objectives, its members and its duration (if present). The contract has to be registered in the Business Register in order to obtain legal personality. The contract has also to be published in the Official Journal of the European Communities⁷¹;
- III. the Group internal governance has to be constituted at least of two organs: the assembly of the members and the administrators⁷². The former organ could take any relevant decision for the Group activities, while the administrators realize operative and administrative activities;

⁷¹ Similarly, if the Group ceases to exist a communication has to be published in the Official Journal of the European Communities.

⁷² Group members could decide to set up other organs to control and coordinate the activity.

- IV. each member of the Group has one vote and none could detain the majority of the votes. Certain decisions requires the unanimity of the members (i.e. the admission of a new member);
- V. the Group could be constituted for mutuality reasons or to make profits. In this latter case, profits will be divided according to the rules contained in the contract (or in equal parts if the contract does not contain any rule);
- VI. the Group could employ a maximum of 500 people and it has to follow the managerial legislation in which it has its legal address;
- VII. independently form the object of the Group (i.e. mutuality or make profits) Italian legislation impose to its administrators to keep accounting books using double-entry accounting and to publish the balance sheet and the profit and loss account in the local Business Register.

According to the European legislation, a EEIG has legal personality, but members have unlimited joint liability for Group debts due to the absence of requirements for a minimum capital.

4.6.5 Temporary Association of Firms (Associazione Temporanea d'Imprese - ATI)

The aim of a Temporary Association is to realize a cooperation among autonomous firms in order to reach the necessary technical, organizational and financial dimensions to participate to public tenders or to civil works of relevant dimension. In Italy this cooperation form is usually used in the construction sector. Simply speaking, in the Temporary Association a single firm (i.e. the mandatory agent) is in charge to present the bid for the public tender and to represent all the firms that have signed the agreement. The mandate is free of charge and it is irrevocable. The contract has to be signed using an authenticated private deed. As a result, an ATI operates only on contractual basis (i.e. it does not acquire legal personality) and its duration is limited to the time needed to realize the public tender (Aip, 2011; Mosco, 2010).

An ATI can be vertical (i.e. firms that decide to jointly realize the work have different specializations) or horizontal (i.e. firms have the same specialization). In the former case the mandatory agent is responsible towards the client to realize the whole construction and each firm is in charge for its own part of the work, while in the latter all firms are responsible to realize the construction (i.e. the client does not care how the work is shared among participants).

4.6.6 Related bilateral contracts (Contratti bilaterali collegati)

Related bilateral contracts are used by a focal firm that desire to coordinate the activities of other firms to realize a specific economic activity (e.g. outsourcing production phases to a web of subcontractors). This coordination is obtained by stipulating a contract between the focal firm and each coordinated firm. As a result, each contract is independent from one another (i.e. the contract is still bilateral), but the group of contracts considered as a whole define a complex set of activities among several firms. It is important to note that each contract does necessarily have the same contractual clauses (i.e. it is not necessarily standardized).

4.6.7 Comparing network contracts with other cooperation agreements

We start our discussion by comparing network contract with consortia. Due to the fact that the Civil Code states that in a consortium the parts agree to realize one phase of their economic activities (i.e. production phase, commercial phase), some scholars contend that the concept of 'phase' could hardly contain the concept of "strategic objectives" (Cafaggi, 2009a; Mosco, 2010). As a result, the network contract provides a clear advantage for entrepreneurs by overcoming such operative limit. By contrast, other scholars claim that lawyers have extended the concept of 'phase' to include all the activities realized in the interest of the members of the consortium long ago (Santagata, 2011). Simply speaking, even a consortium could realize strategic objectives not limited to a single phase. Due to the presence of the an important body of jurisprudence supporting this view (Santagata, 2011), we accept this latter line of reasoning. As a result, we do not consider the network contract as superior to the consortium on this aspect.

Based on the discussed characteristics, a network contract with a coordination organ (type 2) is very similar to a consortium with internal relevance. By contrast, a network contract with a special fund, a coordination organ and a legal personality (type 1) can be easily assimilated to a consortium with external relevance. Both consortia have some compulsory clauses: the basic governance structure formed by an assembly of members and a executive organ, the voting right given to each member of the consortium and the request for unanimity to take some decisions. These limits do not apply to a network contract. However, both consortium with external relevance and "type 1" network contracts share the limited liability and the obligation to prepare an annual balance sheet. It has also been correctly noted that in a network contract the parts publicly declare their strategic objectives, while they are not obliged to do so in a consortium with external activity (Santagata, 2011). In a consortium with external activity the strategic objectives the parts want to reach do not have to be published in the Business Register. A consortium with internal relevance grants even more secrecy since the entire contract does not have to be published.

Network contracts with legal personality and coordination organ (type 1) grants some advantages if compared to the European Group of Interest. As a matter of fact, both agreements grant the possibility to stipulate an agreement with legal personality among firms operating in Italy and in other Member States. However, network contract removes the imposed governance structure, the maximum number of employees and the compulsory majorities needed to take some decisions. A network contract could be stipulated between Italian firms only, while in EEIG it is compulsory that at least two members have to operate in different Member States. By contrast, an EEIG allows to public entities to join the agreement (this is forbidden in a network contract).

Different types of network contracts could be compared to limited liability consortium. We could say that:

- a consortium based on a limited liability company is very similar to a "type 1" network contract (i.e. an agreement with legal personality, autonomous special fund and coordination organ). However, this latter type of agreement does not have to follow any compulsory rule on the organs, on their powers, on the minimum amount of equity and on the nature of contributions;
- a consortium based on a limited partnership also resembles to a "type 1" network contract. Similarly to what we have previously discussed, network contract does not have to follow any compulsory clause on the organs, on their powers and on the minimum equity. By contrast, a consortium based on a limited partnership is similar to a network contract as both agreements do not have to follow any compulsory discipline on the nature of contributions.

Similarly, a "type 5" network contract (i.e. an agreement without legal personality, autonomous special fund and coordination organ) display similar characteristics to a Temporary Associations of Firms and to a group of bilateral contracts. In the former case, a Temporary Association is designed to regulate on purely contractual basis a specific activity and it is essentially used in the construction sector. Network contract helps to overcome these limits as it grants a more flexible way to organize long time activities in every economic sector. In the latter case, a network agreement could be used to substitute a group of related bilateral contracts acting as a 'framework agreement'. The focal firm obtains several advantages by reducing the number of contracts to coordinate the same economic activity, by standardizing the clauses for all firms, by clarifying the objectives to be reached and by reducing the costs related to the enforcement of the contract. A potential disadvantage emerges if the focal firm does not want to publicly declare its strategic objectives and its network of relations.

In the appendix of this chapter a set of tables synthesize the discussed similarities/dissimilarities. These differences can constitute potential advantages or disadvantages depending on the collaborative goal the entrepreneurs want to pursue.

4.7 Conclusion

In this chapter we have provide a review of the European policies supporting SMEs and an analysis of the initiatives issued to implement the Small Business Act principles in Italy. Despite several weaknesses in the implementation of such principles, in 2009 the Italian Government has issued a new form of contractual strategic alliance to help SMEs to improve their competitiveness. This is still an unique experience at European level. Therefore, we have reviewed the main features of the agreement and the evolution of the legal framework. To us, network contract provides a great flexibility to Italian entrepreneurs to craft a strategic contractual alliance. However, we contend a network contract is not the *a priori* best solution. It is simply one of the possible agreements that entrepreneurs could choose in the Italian commercial law to pursue their collaborative goals. Admittedly, a network contract under certain conditions can grant a fiscal benefit. However, this fiscal benefit is only one of the variables to be taken into account in adoption decisions. The presence of several open points in the discipline has also to be carefully taken into account while choosing to stipulate a network contract.

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Appendix

	Legal personality	Special fund	Governance structure	Organs fixed by law	Fiscal advantage	Limited liability	Obligatory balance sheet	Accounting obligations	Mutuality fixed by law	Strategic objectives publicly declared	Minimum equity fixed by law	Discipline of contributions fixed by law	Other relevant requests
Type 1 (for-profit activities)	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	
Type 1 (not-for-profit activities only)	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	
Consortium with external relevance	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	
Limited liability consortium (limited liability company)	Yes	/	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	
Limited liability consortium (limited partnership)	Yes	/	Yes	Yes	No	Yes/No	Yes	Yes	Yes	No	Yes	No	
Limited liability consortium (general partnership)	Yes	/	Yes	Yes	No	No	Yes	Yes	No	No	No	No	
European Group Economic Interest	Yes	/	Yes	Yes	No	No	Yes	Yes	No	No	No	No	a) Members in different European nations b) Maximum number of employees c) Practitioners and public entities could participate d) The contract has to be published in Journal of the European Community

	Legal personality	Special fund	Presence of governance structure	Organs fixed by law	Fiscal advantage	Limited liability	Obligatory balance sheet	Accounting obligations	Mutuality fixed by law	Strategic objectives publicly declared	Minimum equity fixed by law	Discipline of contributions fixed by law	Other relevant requests
Type 5	No	No	Yes	No	No	No	No	No	No	Yes	No	No	
Consortium with internal relevance	No	/	Yes	Yes	No	No	No	No	Yes	No	No	No	
Type 8	No	No	No	No	No	No	No	No	No	Yes	No	No	a) Reduction of number of contracts b) Standardization of clauses c) Clarify the overall objectives and the objectives assigned to each firm d) Clarity in joining the contract by other firms e) The conditions are public for other firms and for the public f) Applicable in all sectors and for all public tenders g) No temporal limit
Group of related bilateral contracts	/	/	/	/	No	/	/	/	/	No	/	/	
Temporary Association of Firms	No	No	No	No	No	No	No	No	No	No	No	No	

PART II

METHODOLOGY

<u>PART I - THEORETICAL BACKGROUND</u>	
Ch. 1 - Debating diffusion in new institutional research	<ul style="list-style-type: none"> - Review diffusion in new institutional research - Discuss relations between diffusion, isomorphism, legitimacy and institutionalization
Ch. 2 - Motivations and perceptions in innovation adoption decisions: a framing perspective	<ul style="list-style-type: none"> - Critically review the framing perspective in adoption decisions - Extend the framing perspective using diffusion of innovation theory - Extend the framing differentiating between familiar and non-familiar innovations
Ch. 3 - Research question and research design	<ul style="list-style-type: none"> - Synthesize our intended contribution to the adoption motivation debate
Ch. 4 - Small Business Act and network contract	<ul style="list-style-type: none"> - Review the evolution of network contract legislation - Relate network contract to the Small Business Act - Identify advantages/disadvantages of stipulating a network contract
<u>PART II - METHODOLOGY</u>	
Ch. 5 - Developing an instrument to measure the perceived attributes of network contracts	<ul style="list-style-type: none"> - Explain why network contract can be considered a diffusing innovation - Discuss how to measure the perceived attributes of an innovation - Develop a set of items measuring the perceived attributes of a network contract
Ch. 6 - Configurational Comparative Methods as a new way to shed light on causal complexity	<ul style="list-style-type: none"> - Shed light on the acronyms and definitions used in CCMs - Discuss the logical foundations of CCMs - Review the techniques used in CCMs (csQCA, mvQCA and fsQCA) - Discuss how CCMs can contribute to the adoption motivation debate
<u>PART III - DISCUSSION</u>	
Ch. 7 - The early diffusion of network contract	<ul style="list-style-type: none"> - Apply fsQCA to the early diffusion of network contract - Discuss the alternative configurations explaining early and not-early adoption - Verify the robustness of results

Chapter 5

DEVELOPING AN INSTRUMENT TO MEASURE THE PERCEIVED ATTRIBUTES OF NETWORK CONTRACTS

In this chapter we want to develop an instrument suitable to measure the perceived attributes of network contracts. As far as we know, this is the first time that a strategic alliance is investigated using the theoretical lens of diffusion of innovation theory. Therefore, we combine the theoretical insights coming from this theory with strategic alliance research. We first discuss why network contracts could be considered an innovation diffusing among Italian SMEs (section 5.2). We then critically review the widely-used methodology to measure the perceived characteristics of an innovation (Moore and Benbasat, 1991). By highlighting some limits, we propose a revised version of this methodology with the aim to improve the clarity of the procedure, its replicability and the quality of results (section 5.3). Finally, we use this revised methodology to define a set of items suitable to measure the perceived characteristics of network contracts (from section 5.4 to section 5.7).

5.1 Introduction

In the previous chapters we have argued that network contract could be considered a new form of strategic alliance diffusing among Italian SMEs. We have also claimed that this diffusion process refers to a non-familiar innovation, an innovation introduced for the first time in the society and in a community of potential adopters. This chapter develops an instrument capable to measure the perceived characteristics of this diffusing innovation.

We start our discussion considering the increasing attention devoted by strategic management scholars on the influence of institutional environment on strategic choices. This attention has been labeled as the 'third research wave' in strategic management theory following the idea that institutional conditions naturally complements industry-based and resource-based perspectives (Peng and Khoury, 2008; Peng et al., 2009; Peng et al., 2008). An institutional environment defines the possible strategic options because "institutions directly determine what arrows a firms has in its quiver as it struggles to formulate and implement strategy" (Ingram and Silverman, 2002: 20). In less poetical terms, we could simply say that some strategic options are outlaw (e.g. child labor) or contrary to existing norms and beliefs (e.g. outsourcing production to firms using child labor in third-world countries). On the contrary, the same strategic choices can be fully supported and legitimated in another society.

Available strategic options in stipulating an alliance are also influenced by formal (e.g. laws) and informal institutions (e.g. culture, norms and values). In particular, "in situations where formal constrains appears to be unclear or fail, informal constrains will play a larger role in reducing uncertainty, providing guidance, and conferring legitimacy and rewards to managers and firms" (Peng et al., 2009: 68). This approach is extensively used to investigate how deep changes in

national institutional environment (e.g. transition from a command to a market economy) have an influence on alliance decisions⁷³. For instance, chaos and uncertainty in institutional conditions favor the selection of partners capable to grant short term benefits (Hitt et al., 2004; Hitt et al., 2000; Roy and Oliver, 2009). Institutional-variables impact export and entry strategies in foreign markets (Gao et al., 2009; Meyer et al., 2009; Meyer and Nguyen, 2005; Wright et al., 2005; Yamakawa et al., 2008) In addition, personal-centered alliances are gradually substituted by market-centered ones if the transition becomes permanent (Peng, 2003; Peng and Zhou, 2005).

Another line of research is interested in understanding the 'institutional readiness', i.e. the influence of institutional attributes in supporting the formation of strategic alliances (Dickson and Weaver, 2011). Simply speaking, this line of research is interested in understanding how institutional environments not in profound transformation could support the formation of strategic alliances. These scholars can be considered the 'geo-botanicals of the strategic alliances'. Similarly to botanicals investigating why and how environmental and climatic conditions play a role in the distribution of communities of plants, scholars adhering to the institutional readiness approach try to understand the influence of institutional attributes in contrasting or supporting the creation of strategic alliances. In this sense, institutional environment has been defined as a combination of economic, political and legal conventions regulating the way in which firms produce, exchange and coordinate their activities (Oxley, 1997; Oxley, 1999). Legal rules on intellectual property, intellectual protection and financial investments also encourage or discourage the formation of alliances (La Porta et al., 1997; Olander et al., 2009; Oxley, 1999). Moreover, the perceived enforceability of laws and the stability in the political environment have a clear influence on the decisions to stipulate alliances with high risks of opportunistic behavior (Dickson and Weaver, 1997; Dickson and Weaver, 2011; Dickson and Weaver, 2012; Dickson et al., 2006).

Following the idea that network contract was created to stimulate the creation of alliances among Italian firms, one could argue that studying the diffusion of such form of collaboration is another contribution to institutional readiness literature. Two counter arguments can be used against this claim. First, institutional readiness scholars usually analyze the whole legislative system present in a given country, while we refer to a single law, i.e. a risible part of the Italian political and legal environment. Second, in our research we are more interested in studying the perceived attributes of the innovation rather than the legislation. Following Rogers' framework, we also know that several external conditions could accelerate or slow down diffusion. For instance, a fast diffusion can be generated by a collective adoption decision, by an intensive use of the communication channels to

⁷³ Since the nineties scholars are also studying the influence of changes in industry-level institutional environment on firms' strategic choice (e.g. (Davis et al., 1994; Oliver, 1991a; Oliver, 1992; Wan and Hoskisson, 2003).

promote the innovation (e.g. mass media or interpersonal networks) and by the efforts devoted by change agents. Due to the complexity of the framework, it is not surprising that diffusion scholars focus alternatively on the characteristics of the innovation, on the characteristics of the social system or on the influence of communication channels. Simply speaking, it is too complex to parsimoniously model the relations among all these elements. Only simulation techniques have proven to be able to virtually replicate these complex interrelations (Abrahamson and Rosenkopf, 1997; Ferro et al., 2010; Kiesling et al., 2012; Nan et al., 2013). Following this line of reasoning, this research will focus on the perceived characteristics of the network contract: relative advantage; compatibility; complexity; result observability; trialability. These five attributes provide a very simple, comparable and intuitive classification scheme to investigate the perceptions of potential adopters. Despite this simplicity, they are capable to predict a great fraction of the variance in adoption decisions (from 49% to 87%) (Rogers, 1995; Rogers, 2003).

This chapter is devoted to develop an instrument to measure the perceived attributes of a network contract capable to explain adoption decisions. As far as we know, this is the first time that Rogers' framework is used to study a new form of strategic alliance diffusing among firms. Due to the absence of previous literature, it seems to be a very challenging task. However, some methodological insights on how to measure perceived attributes are contained in the contribution entitled *Development of an instrument to measure the perceptions of adopting an information technology innovation* by Gary Moore and Izak Benbasat (Moore and Benbasat, 1991). In early nineties this paper was highly innovative as it systematically guided diffusion scholars in translating the perceived attributes in operational terms. Despite this fact, the procedure contained in the paper sometimes lacks of clarity. Therefore, we'll clarify and adapt this methodology to our research topic.

This chapter is organized as follows. We first answer the question whatever a network contract could be considered a diffusing innovation (section 5.2). In section 5.3 we critically analyze the procedure developed by Moore and Benbasat (1991). On this basis, we propose a revised procedure to evaluate perceived attributes structured in well-identified phases. Then, we'll apply this revised methodology to identify a list of items measuring perceptions of network contract (section from 5.4 to 5.7).

5.2 Network contract as an innovation

We start our discussion by answering to this simple question: can we apply Rogers (2003) framework to study the diffusion of network contract among Italian firms? One could argue that Rogers' framework essentially explains the diffusion of technological innovations. In other terms, a

strategic alliance clearly does not display the characteristics of materiality that could be observed in a new technology or in a new product. While this is true, we also need to consider other several aspects. First, Rogers (2003) defines an innovation as an idea, a practice or a object that is perceived as new by an individual or other units of adoption. This definition highlights the possibility to study the diffusion of immaterial innovations. Rogers (2003) constantly recalls examples of such 'immaterial' innovations like the diffusion of the idea to boil (Wellin, 1955) or to drink pure water (Belasco, 1989) and the diffusion of news after a terrorist attack (Rogers and Seidel, 2002). Second, in the discussion of the concept of innovation Rogers says:

"We often think to a technology mainly in terms of hardware. Indeed, sometimes the hardware side of technology is dominant. But, in other cases a technology may also be entirely composed of information; examples are a political philosophy such as Marxism, a religious idea such as Christianity, a new event and a policy such as non smoking ordinance. The diffusion of such 'software' innovations has been investigated, although a methodological problem in such studies is that in their adoption cannot be so easily traced or observed" (Rogers, 2003: 13)

Therefore, non-technological innovations pose a challenge as their diffusion is less traceable, but they are not conceptually different from material ones. In order to be valid, a network contract has to be registered in the local Chamber of Commerce. In May 2013 the Italian Chamber of Commerce publicly released for the first time the list of network contracts stipulated between October 2010 and March 2013 (Unioncamere, 2013b)⁷⁴. This list contains an identification number for the contract, its name and the firms that signed the agreement. Moreover, for each firm it is provided its VAT number and its sector of activity (e.g. industry, agriculture or services). Despite the fact that the diffusion of network contract could be easily traced using this information, we contend that network contract is conceptually similar to a 'preventive innovation'. A preventive innovation is a new idea, practice or technological innovation whose beneficial consequences are highly uncertain in their manifestation and they will emerge in a long lapse of time (i.e. they are difficult to perceive immediately) (Rogers, 2003: 234-235). Healthy food practices to avoid myocardial infarction are a typical example of a preventive innovation. Avoiding an heart attack is a beneficial consequence emerging in long periods (i.e. the rest of the life) and not immediately understandable. Moreover, there is no certainty on the fact the heart attack will not manifest in the future even if the healthy behaviors are strictly followed. In summary, a preventive innovation displays relatively low relative advantages if compared to a non-preventive one (Rogers, 2002). On this basis, we contend that the diffusion of network contract has strong similarities with the spreading of a preventive innovation due to the presence of the so called 'alliance paradox' (Kale and Singh, 2009). This paradox emerges

⁷⁴ This initiative follows the publishing of two detailed reports on the main qualitative characteristics on network contracts published in November and December 2012 (Unioncamere, 2012; Unioncamere, 2013a). Before May 2013, the absence of an internal discipline did not allow the public access to the list of firms involved in a network contract.

because, even though firms stipulate alliances to increase their performance, empirical evidence clearly shows that alliances have usually poor performance and high unsuccessful rates (Day, 1995; Ireland et al., 2002; Kale and Singh, 2009). As a consequence, researchers have devoted a great effort in identifying alliance success factors. It has been claimed that successful strategic alliances depend on careful planning activities (Elmuti and Kathawala, 2001; Hoffmann and Schlosser, 2001; Judge and Dooley, 2006), on the definition of realistic objectives coherent with the firms' strategies (Elmuti and Kathawala, 2001; Hoffmann and Schlosser, 2001; Lunnan and Haugland, 2008), on the access to complementary resources (Hoffmann and Schlosser, 2001; Kale and Singh, 2009; Lambe et al., 2002; Lunnan and Haugland, 2008; Wittmann et al., 2009) and on the development of competencies necessary to manage alliances (Judge and Dooley, 2006; Kale and Singh, 2009; Lambe et al., 2002; Lee and Cavusgil, 2006b; Lunnan and Haugland, 2008; Wittmann et al., 2009). Moreover, successful strategic alliances are more likely to lead to performance improvements and desired outcomes in the long run (i.e. years) rather than in shorter periods of time (Hoffmann and Schlosser, 2001)⁷⁵. Despite this theoretical effort, we'll probably never resolve the puzzling question of why strategic alliances underperform or fail even though the great majority of these enabling conditions are met. This high uncertainty⁷⁶ clearly echoed the characteristics of a preventive innovation. However, this conceptual similarity has a greater impact for change agents and innovation champions. Simply speaking, change agents could find extremely difficult to stimulate adoption of an innovation displaying low relative advantage and result observability.

Another concern in applying Rogers' framework could arise from the fact that network contracts are still diffusing. We want to highlight that studying early diffusion is not necessarily bad as it could help to overcome the so-called 'pro-innovation bias'. This bias essentially claims that researchers have the tendency to focus on innovations that successfully spread among all the members in the social system, that diffuse rapidly and that are not rejected (Rogers, 2003: 106). In order overcome this bias, Rogers (2003) suggests to gather data at several points during the diffusion process or to study innovations that have failed to spread. While investigating early diffusion could help to avoid the pro-innovation bias, this is not also true for the 'recall problem'. This critique emerges from the consideration that diffusion scholars usually ask questions long after the decision was taken. These

⁷⁵ Clearly, the results could not come too late. It has been correctly asserted that "quick and measurable results form the groundwork for a successful co-operation. Early success provides a dynamic to strengthen alliance management and convince skeptics" (Hoffmann and Schlosser, 2001: 364).

⁷⁶ Obviously, this is a general statement that could vary according to the object of the strategic alliance. In the case of network contract, if the contract is simply set up to share information the expected results will emerge much more quick than in a strategic alliance created to jointly develop a new product or to enter in a foreign market.

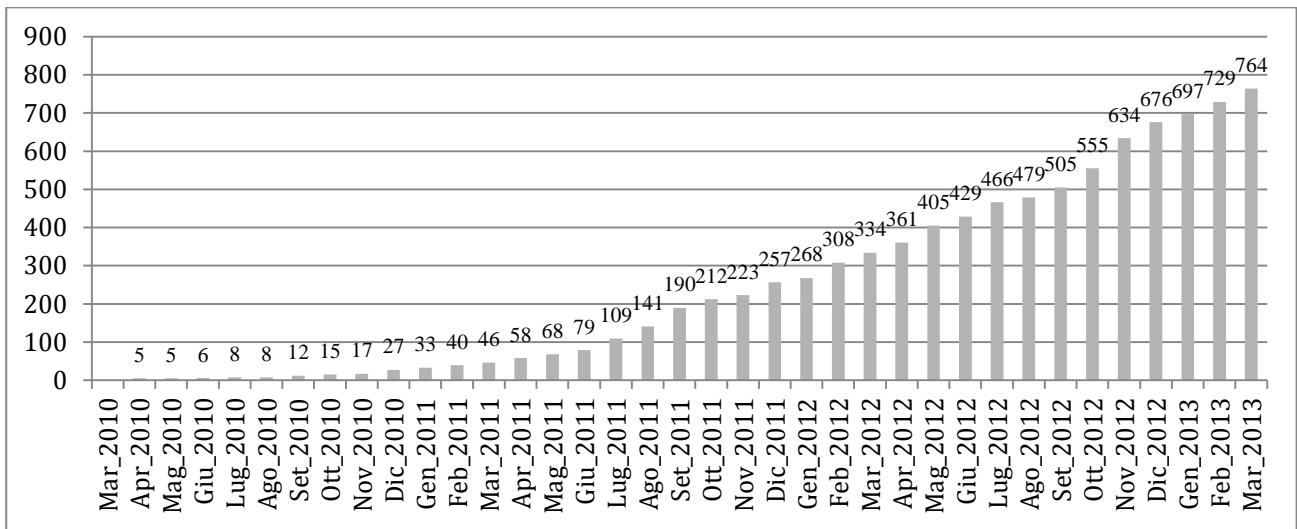
doubts are fully reasonable⁷⁷. While defining the 'ideal' application of theory of diffusion, Tornatzky and Klein claim that the perceived characteristics of an innovation have to be asked to potential adopters prior to (or concurrently to) their adoption-decision (Tornatzky and Klein, 1982: 39). Clearly, this is not always feasible. Rogers (2003) proposes several techniques to avoid these problems while posing questions (e.g. define the questions in such way to help the adopters to recall in mind the adoption decision), but a closer look to his arguments suggests that the best solution is to reduce as possible the time gap between the adoption-decision and the investigation (Rogers, 2003: 127-129). Due to the fact that human perceptions and memories are always influenced by the time flow, we could say that we have to take into account these methodological points while crafting our research, but we cannot fully avoid them. This is not a limit of diffusion theory, it's a general limit of social science research.

Based on the list published in May 2013, we'll analyze the process of diffusion of network contracts without legal personality⁷⁸ (see figure 1 and figure 2). According to the latest available data (April 2013), 764 network contract have been signed and 4.093 firms have been involved in this type of agreement (Unioncamere, 2013b). Despite these numbers appear to be impressive, we have to bear in mind the overall number of Italian SMEs. According to the European Commission, 3.813.805 SMEs were operating in the Italy in 2011 (European Commission, 2012). Put in another way, only 10 Italian firms over 10.000 have been engaged in a network contract. It is also interesting to note that the number of contracts almost doubled between June and September 2011 following the introduction of the fiscal incentives. It has been argued that this sharp increase was essentially due to the deadline (i.e. end of August 2011) to access to the tax advantage (Bentivogli et al., 2013).

⁷⁷ As far as we know there is no research fixing a time limit after which these problems are becoming so relevant to make the results meaningless.

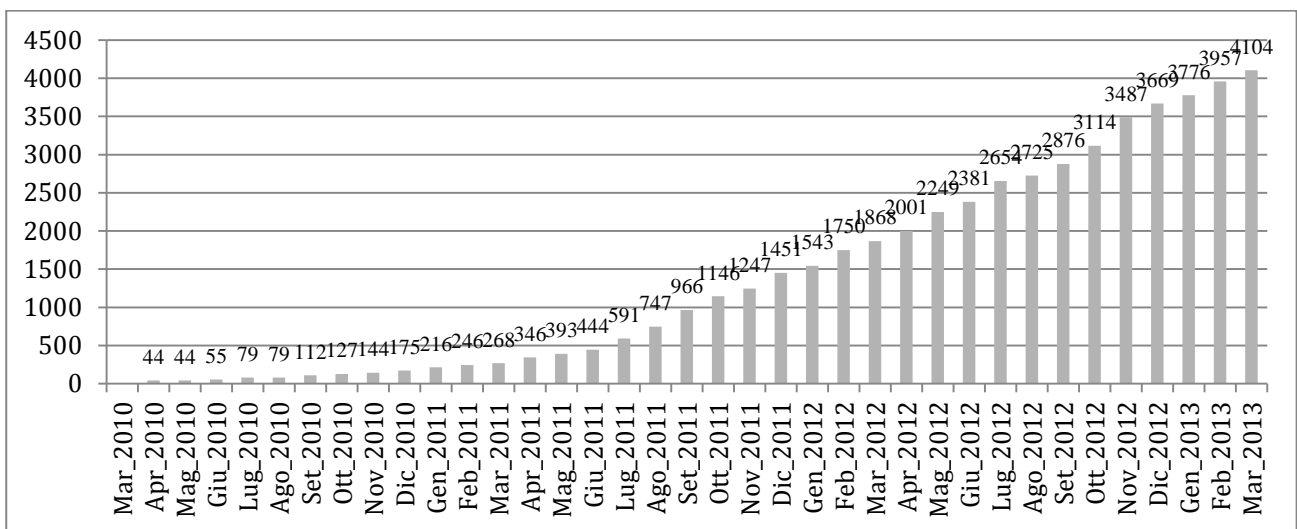
⁷⁸ As previously discussed, a network contract with legal personality is more similar to a joint venture rather than to a contractual strategic alliance. Moreover, this contractual option has been introduced in December 2012. Therefore, in April 2013 only fourteen contracts with legal personality were signed.

Figure 1: Total number of contracts per year



Source: Own elaboration on (Unioncamere, 2013b)

Figure 2: Number of firms involved in a network contract

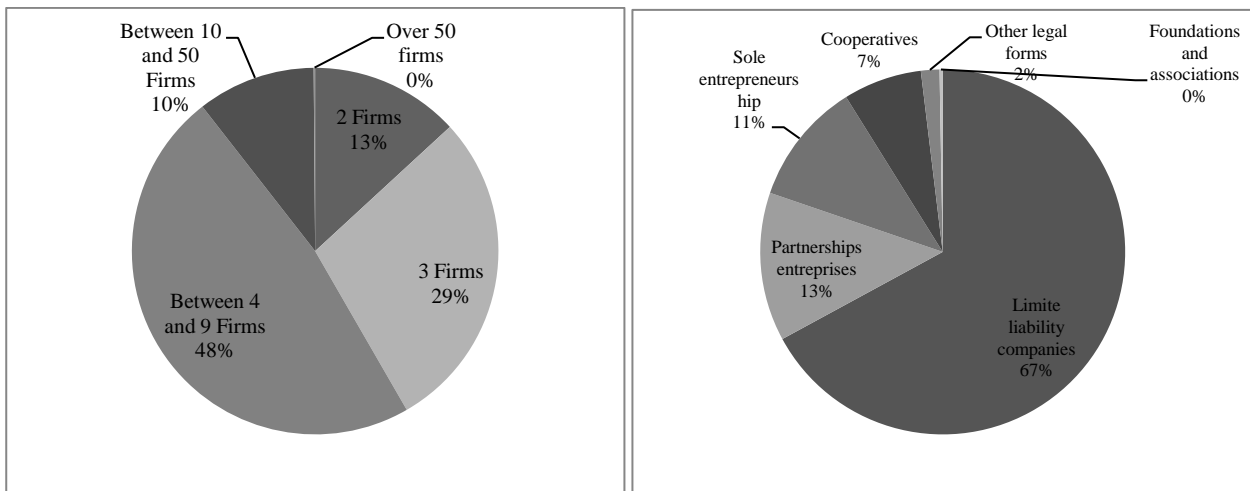


Source: Own elaboration on (Unioncamere, 2013b)

Several tendencies seem to emerge while looking at the characteristics of the firms involve in na network contract (see figure 3 and figure 4). First, essentially half of the contracts involve between 4 and 9 firms. It seems to be a good result since the aim of the legislation is to aggregate SMEs in order to reach common strategic objectives. However, we contend that the 41% of contracts involve 2 or 3 firms (i.e. the minimum dimension to stipulate the agreement). This open an intriguing question on the sufficient number of firms to stipulate an agreement capable to overcome the structural limits of micro and small firms. Due to the absence of performance information on such micro-networks, it is difficult to investigate this aspect. Second, the vast majority of adopters are

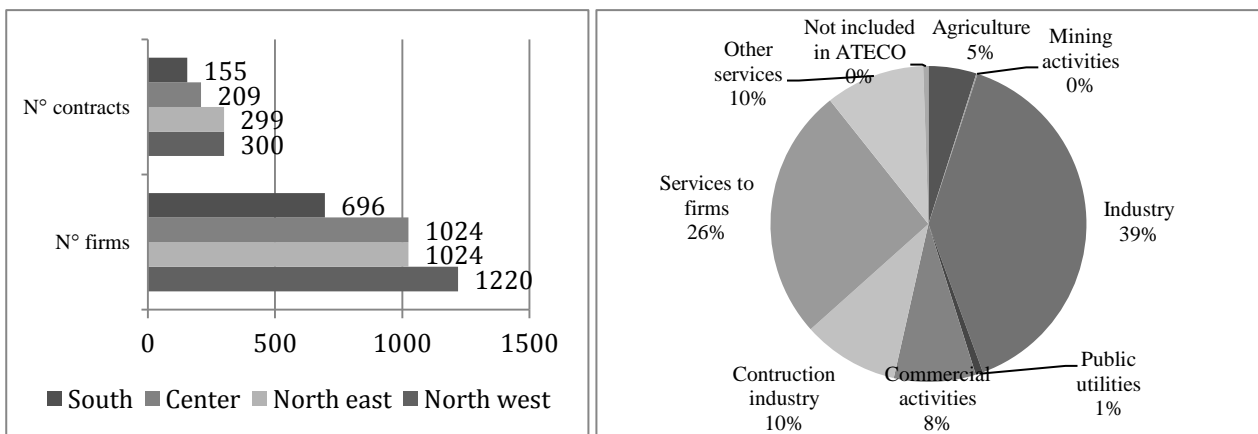
limited liability companies. Third, network contract has been adopted by firms operating in industrial (39%), service (36%), construction (10%) and commercial sectors (8%). Finally, the great majority of contracts was signed in the north east and in the north west of Italy. According to these figures, the spread of network contract is still at the beginning and, hopefully, more and more Italian SMEs will probably decide to use this form of strategic alliance to improve their competitiveness.

Figure 3: Number and legal form of the firms involved in a network contract (April 2013)



Source: Own elaboration on (Unioncamere, 2013b)

Figure 4: Network contracts divide by sector and geographic area (December 2012)



Source: Own elaboration on (Unioncamere, 2013b)

To briefly summarize the arguments contained in this section, we have shown that network contracts could be reasonably considered an innovation that is still diffusing among Italian SMEs. Moreover, it's difficult to make any prediction on its further spreading as it is conceptually similar to a preventive innovation. However, there is no theoretical limit to apply Rogers' framework to the

spreading of network contract. After this analysis, we'll turn our attention to the methodological issues in measuring the perceived attributes of an innovation.

5.3 Methodological issues related to measuring the attributes of an innovation

The influence of perceived attributes on the decision to adopt (and to implement) an innovation is one of the 'classical' debates in diffusion of innovation theory. In early seventies several reviews demonstrate the existence of considerable discussion on this topic long before the development of Roger's framework (Downs and Mohr, 1976; Lin and Zaltman, 1973; Rogers and Shoemaker, 1971; Rothman, 1974). By having a closer look to these reviews, it clearly emerges that a great number of constructs, variables and methods to measure perceptions were used. As a result, Tornatzky and Klein (1982) devoted a great effort to identify and verify the consistency of these constructs. A bit surprisingly they found that, in more than a hundred studies, different labels were used to refer to only ten attributes⁷⁹. In addition, only three of them (i.e. relative advantage, complexity and compatibility) were found to have the most consistent significant relationship with adoption decisions (Tornatzky and Klein, 1982). These theoretical insights lead to an increase attention in developing replicable measures, in reducing construct overlapping and in defining valuable techniques to assess their consistency. A decade after, these efforts were summarized by Gary Moore and Izak Benbasat in the contribution entitled *Development of an instrument to measure the perceptions of adopting an information technology innovation* (Moore and Benbasat, 1991). Despite the fact that instrument was originally created to measure the perceived attributes of personal workstations, the paper was written with the ambition to assess the attributes of any innovation. In the latest version of *Diffusion of Innovations*, Rogers clearly endorses this approach when defining it as a "sophisticated and careful methodology" (Rogers, 2003: 225). This is not surprising as the methodology was initially based on the five characteristics developed in Rogers (1983) plus three more attributes: voluntariness of use, image and result demonstrability⁸⁰.

In their study, Moore and Benbasat constructed a rigorous procedure using multiple rounds of experts (i.e. judges) to evaluate the perceptions of potential adopters. Despite a clear attempt to define a well-crafted measuring instrument, we have found that the procedure is sometimes confusing and redundant in certain points. For instance, the authors mix construct validity with content validity even though it is widely recognized that they are conceptually distinct (Sekaran and

⁷⁹ The attributes are the following: perceived advantage, compatibility, complexity, observability, trialability, cost, communicability, divisibility, profitability and social approval.

⁸⁰ Voluntariness of use is "the degree to which the use of an innovation is perceived as being voluntary, or of free will", while image is "the degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Rogers, 2003: 195).

Bourgie, 2013). Therefore, we'll analyze and comment the three stages in which Moore and Benbasat have articulated their methodology:

1. *Item creation*: in this phase researchers have to create a pool of items related to each perceived attribute that will be tested in the following phases. In doing so, Moore and Benbasat suggest to adopt items that have already proven to work in previous research and to create additional ones only if necessary. The authors also suggest to verify the extent to which all aspects of the constructs are represented in the items (i.e. content validity) and to eliminate redundancy and ambiguities. We have already highlighted that content validity would be better included in a separate phase from item creation;
2. *Scale development*: in this phase researchers have essentially to verify the item construct validity, i.e. they have to verify that the items are good enough to measure real world observations and to fit with the related constructs. In order to achieve this objective, Moore and Benbasat adopt the technique to involve groups experts (i.e. judges) and to ask them to sort the previously identified items into construct categories. In order to avoid biased perceptions, each judge took part only once in the procedure and he/she sorted the items independently from the others judges in his/her group⁸¹. At the end of each round, a panel group involving all judges was organized to categorize the items into the definitions and the labels used by the authors (i.e. target construct). This procedure was repeated for four rounds, with limited differences among them. While in round one and round three the judges were allowed to provide their own labels and definitions for the constructs, in round two and four judges were always sorting the items according to the labels and the definitions provided by the authors⁸². We want to highlight that this two-stages procedure emerges with extreme difficulty from Moore and Benbasat's discussion. While the sorting procedure for each judge is well detailed, the reader has a great difficulty in understanding the role of the panel of judges in supporting construct validity. In particular, the panel of judges is introduced in the sub-section devoted to analyze scale reliability, long after the introductory sub-section in which the role of individual judges was detailed. Similarly, the appendix of

⁸¹ Moreover, judges were provided with a standard set of instructions explaining the aim of the study, the procedure and the expected outcome. Moreover, in order to ensure that the procedure was fully understood "judges were allowed to ask as many questions as necessary in order to ensure they understood the procedure. Following this, a trial sort was done by each judge on a sample items unrelated to the constructs of the study. In this case, ten statements were written about various aspects of an automobile, some of which were deliberately constructed to be ambiguous. Judges were asked to sort the test cards, following the instructions they had received. Any misunderstandings resulting from the instructions were clarified. Furthermore, after the judges had sorted the ten test items, and labeled the categories, they were shown how the ambiguous cards could be resorted to create different construct categories" (Moore and Benbasat, 1991: 200).

⁸² Clearly, these definitions and labels were constantly refined across rounds following the suggestions emerged in previous ones.

the paper is devoted to explain the functioning of the item-place score techniques (i.e. the technique specifically developed to qualitatively evaluate inter-judge agreement) rather than to help the reader to understand the role of the panel sessions. These facts generate a sense of frustration in the reader and make very difficult to reproduce the procedure in other research situations.

We now turn to discuss how construct validity has been assessed. Construct validity is usually measured evaluating 'convergent validity' and 'discriminant validity' (Campbell and Fiske, 1959; Sekaran and Bourgie, 2013)⁸³. The former predicts that items referring to the same construct (or to theoretically similar constructs) will display high levels of correlation among them. By contrast, the latter highlights that items related to theoretically distinct constructs have to display low levels of correlation. Construct validity is typically assessed using factor analysis, multitrait-multimethod matrix or correlation analysis (Sekaran and Bourgie, 2013). Moore and Benbasat choose this latter solution by measuring Cohen's Kappa (Cohen, 1960; Cohen, 1968) and by developing a new tool defined as 'item placement score technique'. While Cohen's Kappa coefficient is a widely recognized statistical tool to measure the inter-judge agreement in categorizing items, the item placement score techniques essentially evaluates the frequency to which the items are correctly categorized in the target constructs. This task is realized using a matrix with the target construct in the rows and the judge sorting in the columns. Therefore, the cells in the diagonal of the matrix measure the frequency of cases in which the items were correctly sorted in the target category, while other cells measure uncorrected positioning. The higher is the percentages of items in the diagonal the higher is the degree of inter-judge agreement across the panel. Moreover, the analysis of the rows provide an indication of construct discriminant validity as too much items outside the diagonal essentially means that the construct is not enough differentiated. We could say that the underlying idea of this tool is quite similar to the multitrait-multimethod matrix developed by Campbell and Fiske (1959)⁸⁴. Despite this qualitative analysis has no established guidelines to identify good levels of placement, Moore and Benbasat consider it as a good technique to highlight those items that fit in more than one category (i.e. they are too indeterminate) and need to be refined;

⁸³ Campbell and Fiske (1959) were the first to introduce these two subcategories to evaluate construct validity. The authors also developed a specific method (the 'multitrait-multimethod matrix') based on a correlation table that simultaneously display the value that an item obtain in these two subcategories when it is calculated with different collection methods.

⁸⁴ Clearly, the item placement score technique uses frequencies instead of the correlations used in the multitrait matrix. Moreover, it is limited to one method to collect the items.

3. *Instrument testing*: in this stage two pilot tests are used to assess the reliability of the scales and the comprehensibility of the questionnaire. In the former test, the instrument was distributed to only 20 users of personal work stations in two faculties. In the latter test, the instrument was sent to 66 users with a similar background to the target population of the study. In order to test the reliability of the scales, Moore and Benbasat use two indicators to estimate the reliability of the survey: Guttman's lower bounds (Guttman, 1945) and Cronbach's ALPHA (Cronbach, 1951; Cronbach, 1970). The former indicator is a set of measures constructed following the idea that their higher value constitute the lower bound of scale reliability. By considering the average inter-item covariance and the average item variance, the latter indicator assesses whatever the variability in responses arise from the presence of different opinions (i.e. the survey is reliable) or not (i.e. more work is needed to avoid confusing items). Cronbach's ALPHA is one of the most diffused measures to assess inter-item consistency reliability (Sekaran and Bourgie, 2013). We want to clarify that, in this stage, Cronbach's ALPHA and GLB are used on a limited sample of users (i.e. the two pilot tests) to eliminate those items proving to undermine scale reliability⁸⁵.

In the final part of the reliability section Moore and Benbasat (1991) also use a principal component factor analysis with VARIMAX rotation aiming to further support construct validity. This choice probably arises from the fact that VARIMAX rotation has been applied to the data collected during the pilot tests. However, construct validity is conceptually different from reliability that the authors were discussing in the 'instrument testing' phase. While construct validity verifies "how well the results obtained from the use of the measure fit the theories around which the test is designed" (Sekaran and Bourgie, 2013: 227), reliability measures the absence of biases across the items in the instrument. As a result, it would be preferable to consider the assessment of the item-construct relations coming from the pilot tests as a distinct phase from the scale reliability assessment.

In summary, several weak points seem to emerge. First, the possibility to easily replicate the methodology in other research contexts is undermined by some confusion among phases. Second, different aspects to assess the goodness of measures are sometimes mixed together (e.g. construct validity and contend validity). Third, the relevance of the panel of judges in assessing construct validity is unclear. Therefore, we present a revised version of the methodology used to measure the

⁸⁵ Moore and Benbasat (1991) also calculate Cronbach's ALPHA on the responses obtained from a field test, formed by a larger sample of respondents (i.e. 540). This sample also provides the data on which the principal component analysis has been performed.

perceived characteristics of an innovation (see table 1). We have identified six stages named 'item creation', 'content validity', 'first construct validity assessment' and 'scale reliability and final construct validity assessment'. For each stage we have identified the related sub stages (if present), their main objectives, the steps and the techniques used to reach them. In the next sections we'll apply this methodology to identify the perceived attributes of network contract.

Table 1: A revised methodology to evaluate the perceived attributes of an innovation

Phase	Sub Phases	Goal	Steps to reach the goal	Techniques used
Phase 1 - Item creation	/	Translate innovation attribute into a list of candidate items to be tested	1) Provide clear definition of each attribute 2) Adapt existing items used in past research 3) Develop new items by using the literature on the topic	/
Phase 2 - Content validity	/	Verify the extent to which each item represents the construct	1) Eliminate redundant items 2) Clarify existing items 3) Refine the definitions and the names of each attribute	Discussion with experts on the topic and statisticians
Phase 3 - First construct validity assessment	Obtaining data	(1) Single judge Using several rounds of judges to sort items into construct categories	1) Define the number of rounds and the number of judges per round 2) Decide in what round(s) an individual judge could provide its own label and definition for the construct 3) Identify judges capable to assess innovation attributes 4) Prepare the instructions and a trial to explain what judges are expected to do 5) Each judge has to sort items independently from others judges in the group	/
		(2) Judge Panel Group Panel group of all judges in the round to sort the items in target constructs	1) Define the target constructs used in the panels 2) Constantly refine target constructs using the suggestions coming from the past rounds	
	Construct validity assessment	Refine the differentiation of items in each round	/	Item placement score technique
		Measure the inter-judges agreement in each round	/	Cohen's Kappa coefficient
Phase 4 - Scale reliability and final construct validity	PILOT TEST			
	Obtaining data	Send the questionnaire to a limited number of adopters	1) Randomly order items of the constructs 2) Identify a convenient numbers of respondents (very small at initial stages)	/
	Reliability assessment	Verify instructions and items comprehensibility	Use comments coming from the first pilot test to improve these aspects	/
		Verify survey reliability	/	Guttman's Lower Bounds (GLB)
		Verify inter-item reliability	/	Cronbach's ALPHA
	FIELD TEST			
	Obtaining data	Send the questionnaire to a great number of adopters		
	/	Verify the item-construct relations using data from pilot tests	/	Principal components analysis
	Verify survey reliability	/	Guttman's Lower Bounds (GLB)	Verify survey reliability
Verify inter-item reliability	/	Cronbach's ALPHA	Verify inter-item reliability	

Source: own elaboration

5.4 Creating the items to measure the perceived attributes of network contract (Phase 1)

As far as we know, this is the first time that the perceived attributes of a contractual strategic alliances are measured. As a result, we could not rely on existing items developed in previous research. This is not necessarily a bad thing as Rogers' framework and Moore and Benbasat's methodology are general enough to be extended to any type of innovation. Moreover, Rogers strongly recommends to specifically designed scales for each innovation and for each population of potential adopters rather than simply replicate past studies (Rogers, 1995; Rogers, 2003).

On this basis, we will try to theoretically define a set of items capable to measure the perceived attributes of network contracts. In doing so, we'll also adhere to the following 'best practices' used by diffusion of innovation theory:

- due to the fact it has been demonstrated that adoption is driven by perceptions rather than by 'primary characteristics' (i.e. the inherent characteristics of an innovation that are independent from human perception) (Downs and Mohr, 1976), the items will always refer to the 'perceived attributes' of network contract. For instance, an item stating 'I want to adopt network contract because it is an innovative form of cooperation' refers to a perceived attribute of the innovation, while an item claiming that 'I want to adopt network contract because it is the most recent law to support the cooperation among SMEs in Italian legislation' does not. This latter item is clearly true and it refers to a characteristic which is independent from the perceptions of potential adopters;
- items should refer to a specific object of analysis (i.e. the innovation) and to a well specified time frame (i.e. now or in the future). These elements could be either included in each item or considered implicit if they are contained in the general instructions provided with the questionnaire (Moore and Benbasat, 1991: 199).

In this section we'll separately discuss the following perceived attributes of the network contract: relative advantage, complexity, compatibility, trialability, result observability and institutionalization. These attributes recall the 'traditional' constructs in Rogers' framework. One could argue that economic and social benefits (i.e. the relative advantage) are enough to persuade potential adopters to choose an innovation. This is also the implicit assumption made in the models developed by Tolbert and Zucker (1983) and by Kennedy and Fiss (2009). In contrast to this view, we believe that relative advantage is only part of the story. In the list of the perceived attributes we have also added the institutionalization of the network contract essentially for two reasons. First, Rogers strongly recommends to integrate his framework with additional attributes capable to

explain adoption (Rogers, 2003: 225-226). These additional attributes could emerge either from previous research or from the direct interaction with the population of adopters. Admittedly, we have found Rogers' argumentation on the point a bit confusing. In less than two pages he repeatedly warn scholars to keep an open mind to identify additional attributes, while he essentially claims that the empirical evidence shows that his general framework is capable to explain adoption (i.e. the additional attributes are essentially usefulness). Second, in our critique to Kennedy and Fiss (2009) we have highlighted that the two authors do not effectively try to measure the perceived level of institutionalization of TQM practices among US public sector hospitals. They simply assume that wider diffusion means institutionalization, but this is not necessarily true. As a consequence, we have included this additional perception in our analysis.

5.4.1 Relative advantage

The relative advantage is "the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 2003: 229). Simply speaking, the relative advantage emerges because the innovation solves a problem of the adopter or discloses some opportunities previously impossible to be reached. In practical terms, an increase in productivity and efficiency or a reduction in costs and time are elements usually related to relative advantage. Therefore, we define the relative advantage as *the perceived economic and social benefits arising from the adoption of a network contract*. On this basis, we identify two dimensions forming this construct: economic benefits and social benefits. We'll discuss them separately.

Economic benefits

Scholars unanimously agrees on the fact that firms decide to join up an alliance to pursue performance and competitive advantages (Barringer and Harrison, 2000; Das and Teng, 2001; Day, 1995; Holmberg and Cummings, 2009; Nielsen, 2010). Alliances could be stipulated following the strategic intent to create value by combining existing resources and capabilities (i.e. exploitation alliances) or by creating new ones (i.e. exploration alliances) (Koza and Lewin, 1998; Koza and Lewin, 2000). In particular, small firms stipulating an alliance with larger ones increase their performance and growth capabilities thanks to the possibility to fully exploit their capabilities and resources, to develop new ones and to increase their status and recognition (Alvarez and Barney, 2001; Dyer and Singh, 1998; Gulati, 1998; Stuart, 2000; Stuart et al., 1999)⁸⁶. Clearly, the alliance type has an influence on the expected economic benefits (Van Gils and Zwart, 2009). Partners in

⁸⁶ Only recently, this mainstream assertion has been challenged. An increasing number of scholars are wondering if strategic alliances among small-sized firms and larger ones leads to negative consequences for small firms (Bae and Gargiulo, 2004; Singh and Mitchell, 2005; Vandaie and Zaheer, Forthcoming).

production and technological alliances are more interested in lowering production and investment costs, while in marketing and distributions agreements they are more focused in increasing market penetration. Therefore, a plethora of measures has been used to assess the expected economic benefits. For instance, firms could decide to stipulate an alliance to increase market share, to develop new products, to expand sales channels, to internationalize, to reduce costs, to develop together new products and so on (Dickson and Weaver, 1997; Gulati, 1998; Street and Cameron, 2007; Van Gils and Zwart, 2009).

For our research purposes, it is impossible to define a precise set of items measuring perceived economic benefits for a simple reason: network contract legislation grants an high degree of freedom in choosing the object of cooperation. In other words, firms could decide to stipulate the agreement to reduce costs, to internationalize, to jointly develop a new product and so on. As a consequence, we have decided to map the possible economic benefits in more general terms. The items will ask the respondents whatever signing a network contract is expected to increase the expected revenues, profits, and market positioning of the firm. These items are also coherent with the economic benefits that several reports and academic contributions claim to be associated to stipulating network contracts (Aip, 2008; Aip, 2009; Bargagli, 2011a; Bargagli, 2011b; Cafaggi, 2009a; Di Pace, 2011; Ferrari, 2010; Retimpresa, 2012).

In early stages, incentives could be important to boost adoption of an innovation. However, this type of stimuli come with a cost as adopters can be more attracted by these incentives rather than by the innovation. If this is the case, the diffusion of the innovation has a poor probability to become a self-staining process (Rogers, 2003). In 2010 a fiscal incentive was introduced to support the diffusion of network contracts. More recently, there is an increase in the number of public tenders that assign resources to the firms that decide to stipulate a network contract. We expect that these incentives constitute part of the expected economic benefits that potential adopters take into account. Therefore, we introduced a set of items asking if respondents could access to more regional and State incentives by stipulating a network contract rather than other cooperation agreements.

Image benefits

Social benefits are as important as economic ones in explaining diffusion. Generally speaking, increases in status, image or reputation are more important for innovators and early adopters rather than late majority and laggards (Rogers, 2003). Therefore, one could argue that social benefits are part of the construct 'relative advantage'. We admit that there is no unanimous agreement on this assertion as several scholars contend that social approval is enough different from relative

advantage to be considered as an independent construct (Moore and Benbasat, 1991; Tornatzky and Klein, 1982). In our opinion, this problem arises from different operationalizations of social benefits for several innovations. We have to be pragmatic on this aspect: what matter the most is that social advantages have to be taken into account our study.

It is recognized that social advantages integrate economic ones when firms decide to stipulate a strategic alliance (Baum et al., 2000; Dacin et al., 2007; Oliver, 1990; Oliver, 1997). Several studies demonstrate that those strategic agreements have an impact on a firm legitimacy, reputation and status⁸⁷ (Dacin et al., 2007; Lin et al., 2009; Turcan, 2012; Washington and Zajac, 2005). By stipulating an alliance with already legitimated partners, firms could operate in geographical and product markets previously inaccessible or obtain social approval from local communities and customers (Dacin et al., 2007). Stipulating strategic alliances with high-status partners could be also used as legitimacy signals capable to improve the surviving chances of newly constituted firms (Baum and Oliver, 1991a) and for those involved in an IPO (Khoury et al., 2013). Scholars have also recently acknowledged the existence of inter-partner legitimacy, i.e. the mutual acknowledgement among alliance partners that their actions will be proper in all of stages of their agreement (Kumar and Das, 2007). This type of legitimacy is not only valuable in an existing agreement as being perceived as a 'good' partner could attract other firms interested in a strategic alliance (Dacin et al., 2007). Therefore, we developed a set of items measuring the possibility to signal to external stakeholders the fact that the firm is engaged in a strategic alliance.

Deephouse and Suchman (2008) combine the concepts of organizational status, reputation and legitimacy to identify the organizational prestige that denotes the capacity of an organization to achieve its objectives thanks to a favorable social evaluation. Following this line of thought, we developed a set of items to include organizational status, reputation and image as part of the relative advantage. We briefly recall that Kennedy and Fiss (2009) use the terms 'social benefits' for early adopters and 'social threats' for later ones. They operationalize these constructs respectively as as market leadership and accreditation with US hospital authority. Therefore, this view is conceptually coherent with our proposal to use organizational prestige as social benefit.

⁸⁷ As we have discussed in the first chapter, organizational legitimacy is different from organizational status and organizational reputation. We'll briefly recall these concepts. Organizational legitimacy refers to the normative support (i.e. approval from key stakeholders or other relevant social groups) attributed to an organization that adheres to implicit or explicit social expectations (Colyvas and Johnson, 2011). By contrast, organizational status is essentially the ranking of an organization based on some desirable traits when compared to other firms (Deephouse and Suchman, 2008). Finally, organizational reputation concept refers to a generalized expectation about a future behavior or performance based on collective perceptions of its past behaviors or performances (Love and Kraatz, 2009).

5.4.2 Compatibility

Compatibility refers to the degree to which the innovation is perceived as coherent with existing values, past experience and needs of potential adopters (Rogers, 2003: 15). Potential adopters are less likely to adopt innovations perceived as poorly compatible with their experiences, cognitions and behaviors. Ironically, this aspect is usually underestimated by change agents. For instance⁸⁸, water-boiling practices suggested to Peruvian villagers failed to diffuse because local culture consider hot water as dangerous for health. Similarly, Indian farmers retain the habit to cover the tractors with blankets as they were horses, while they did not carry out the basic maintenance of the tractors as they did not have any cultural reference to do this. Even the name of an innovation could evocate some cultural meanings influencing perceived compatibility. The case of the Chevrolet NOVA is quite funny as the car displayed a disappointing low rate of sales in Spain because NOVA was very similar to the Spanish expression '*no va*' used to warn that something is broken. As a consequence, the name was perceived as negative by potential drivers despite the actual good quality of Chevrolet NOVA. Rogers (2003) uses the metaphor of the 'empty vessel fallacy' to elucidate the fact that pre-existing ideas, knowledge, experiences and values have an influence on adoption decisions⁸⁹. The higher is the perceived compatibility, the lower is the related perceived uncertainty.

Due to the fact that scholars appear to be interested in developing sophisticated diffusion models, it has been claimed that poor attention is given to compatibility issues in new institutional research (Strang and Soule, 1998; Vasi, 2006)⁹⁰. Therefore, we could think at compatibility as an intersection between the characteristics of the innovation being adopted and the collaboration values (or past experiences) of an organization (Knudsen et al., 2003). The more an innovation is coherent with these aspects the more it will be adopted.

Organizational values

Vasi (2006) has demonstrated that change agents could appeal or even change organizational values to induce adoption. In the former case, change agents simply emphasize the connection between the innovation and the existing organizational values. In the latter case, change agents directly influence the beliefs and values of potential adopters making them more similar to those embedded in the

⁸⁸ The examples used in this subsection are taken from Rogers' *Diffusion of Innovations* book. The book is full of examples of innovations that fail to spread due to poor compatibility with past experiences, values and beliefs.

⁸⁹ "Change agents and others who introduce an innovation often commits an 'empty vessels fallacy' by assuming that potential adopters are blank slates who lack any relevant experience with which to associate the new ideas. The empty vessel fallacy denies that compatibility is important"(Rogers, 2003: 254).

⁹⁰ "Diffusion scholars may know that potential adopters are put in contact with an innovative practice, yet they cannot explain exactly what they observe and how they make the decision to adopt the practice" (Vasi, 2006: 444).

innovation. Clearly, more complex activities are needed to change the values and beliefs of potential adopters. As a consequence, we expect that network contract will be highly compatible with firms that have already developed collaborative values. We want to highlight that collaboration values do not have to necessarily arise from past contractual agreements. Exchanges in equity, joint venture or even relational linkages are valuable substitutes of contractual strategic alliances (Elmuti and Kathawala, 2001; Gulati et al., 2000; Holmberg and Cummings, 2009; Poppo and Zenger, 2002). These cooperation agreements constitute valuable experiences in which a firm could develop collaboration values.

Past experiences

It is increasingly acknowledged that firms learn from strategic alliances (Das and Kumar, 2007; Lumineau et al., 2011). Simply speaking, while stipulating an alliance firms learn about their partners, the firms' needs and the expected outcomes. Moreover, firms learn and develop specific capabilities on how to stipulate and manage an alliance. In this sense, past experiences facilitate the process of stipulating and renegotiating new alliances (Argyres and Mayer, 2007; Ariño and De La Torre, 1998; Mayer and Argyres, 2004). Simply speaking, the more alliances a firm stipulates, the more it becomes skilful in such activities. Large firms create a separate office responsible for creating, coordinating and managing their strategic alliances (Kale et al., 2002; Kale et al., 2000). More commonly, these skills are tacit as they are embedded in the professional experiences of organizational members⁹¹ (Kale and Singh, 2007). On this basis, we expect that firms with previous experiences in collaboration will find network contract as highly compatible.

Firms could also decide to initiate collaborations with already existing partners (Beckman et al., 2004; Li et al., 2008). It is widely acknowledged that the contractual complexity of the alliance, its structure and its governance is influenced by previous collaborations existing among partners (Gulati, 1995; Reuer and Ariño, 2007; Zollo et al., 2002). First-hand information about partners, adequate confidence in their cooperative behaviors and expected satisfactory cooperation make easier to stipulate an agreement (Das and Teng, 1998a; Dekker and Van Den Abbeele, 2010; Goerzen, 2007; Gulati, 1995; Woolthuis et al., 2005). Following this line of thought, we expect that firms stipulating a network contract with existing partners perceive this strategic cooperation as highly compatible with its past experiences (i.e. network contract is the continuation or transformation of pre-existing relations).

⁹¹ These two systems are not mutually exclusive. For instance, some tacit know-how on how to create could be codified and shared among the members of an organization by using documents and committees (Kale and Singh, 2009: 53).

5.4.3 Complexity

Complexity measures the degree to which an innovation is perceived as difficult to understand and use (Rogers, 2003: 15). Let's think about the diffusion of personal computers in the mid eighties⁹². Despite the prices of personal computers were sharply falling, the command interface was still perceived as too difficult to understand and complex to use by an average user. This perception was only partially true as a fair amount of time was necessary to learn on how to use it. As we could easily note in the example, what matters is the *perception of complexity*.

It is quite logical to say that high levels of perceived complexity slow down the diffusion process. Ironically, high levels of perceived complexity are not necessarily bad for early adopters. Assume, for the sake of argumentation, that a firm introduces a new technology capable to provide a great cost reduction (i.e. an high and clear relative advantage). Competitors are aware of these potentialities, but they also perceive the innovation as very difficult to use. As a result, very few of them decide to choose the new technology and stick to the older ones. This perceived complexity grants a competitive advantage to early adopters. By contrast, a change agent willing to diffuse an innovation could become quite upset by the fact that the spreading process is slow down by high perceived complexity. We want to point out that the complexity as defined in Rogers (2003) is very similar to the 'ease of use' identified in Moore and Benbasat (1991). This latter construct refers to the "degree to which an individual beliefs that using a particular system (*i.e. an innovation in more general terms*) would be free of physical and mental effort" (Moore and Benbasat, 1991 : 197 - emphasis added). It is quite obvious that the lower is the effort required to use the system, the lower is the overall complexity. On this basis, we define complexity as *the perceived difficulty in finding the partner, in stipulating the contract and in following post-formation adjustments*. In doing so, we have identified the source of perceived complexity following the classical lifecycle phases of a strategic alliance: formation phase, designing phase and post-formation phase (Kale and Singh, 2009; Schreiner et al., 2009).

Finding the partner(s)

Since the nineties finding the 'right' partner to stipulate a strategic alliance is considered a key task (Brouthers and Wilkinson, 1995; Ireland et al., 2002; Kanter, 1994; Mitsuhashi and Greve, 2009). It has been claimed that partners have to be identified by carefully reviewing corporate strategy, by mapping current and potential partners in the industry (or in other industries) and by defining

⁹² We have taken this example from the huge literature dealing with the diffusion of personal computers (Dutton et al., 1987; Lin, 1998; Venkatesh and Brown, 2001). In our discussion, we just want to point out that command interface was one the great concerns in the adoption decision of personal computers.

appealing common strategic objectives⁹³ (Holmberg and Cummings, 2009). A 'right partner' has to display several features (Das and Teng, 2000b; Gulati et al., 2000; Hoffmann and Schlosser, 2001; Shah and Swaminathan, 2008). First, it has to possess complementary resources capable to generate synergies⁹⁴. Second, it has to display compatible strategic objectives and commitment in reaching them. Third, it has also to display similar organizational culture and values. To sum up, we translate in operational terms the first source of complexity as a difficulty in finding firms that want to stipulate a network contract.

Stipulating the contract

Contractual agreements are widely recognized as valuable governance form in strategic alliances (Mayer and Argyres, 2004; Poppo and Zenger, 2002; Reuer and Ariño, 2007; Teng and Das, 2008). Similarly to other contracts, alliances have to contain clear and realistic objectives, precise definitions of mutual rights and duties, clauses dealing with the emerging disputes in the alliance (Hoffmann and Schlosser, 2001; Kale and Singh, 2009). Contractual safeguards are also important elements to reduce the possibility of opportunistic behaviors and reduce uncertainty on the expected outcomes (Judge and Dooley, 2006). It has also been proven that the complexity and heterogeneity of contractual provisions are influenced by the asset specificity, by the duration of the contract and its importance (Reuer and Ariño, 2007; Reuer et al., 2006). However, stipulating a complex contract does not necessarily mean to stipulate a good contract. Performance in strategic alliances emerges thanks to the appropriate combination of contractual and relational aspects coherent with the strategic objectives to be reached (Faems et al., 2008; Hoetker and Mellewigt, 2009; Lee and Cavusgil, 2006a; Lui and Ngo, 2004; Luo, 2002; Mayer and Argyres, 2004; Ness, 2009; Nielsen, 2010; Pittino and Mazzurana, 2013; Poppo and Zenger, 2002; Zollo et al., 2002). Moreover, writing contracts consumes resources (Ariño and Reuer, 2004). First, firms decision makers (i.e. managers and/or entrepreneurs) usually spend time to negotiate the contractual clauses. Second, contractual alliances are usually stipulated using lawyers and consultants. Third, the absence of previous ties among partners reasonably requires more times and efforts compared to situations in which firms already know each other. Following these insights, we have introduced a set of items claiming that it complex, time-consuming and costly to stipulate a network contract.

⁹³ However, in the great majority of cases managers use simple heuristics to find partners.

⁹⁴ For a long time it has been recognized that strategic alliance partners bring at least four categories of critical resources: financial, technological, physical and managerial (Das and Teng, 1998b). More recently, this classification has been integrated by including social capital, i.e. the web of relations that each partner have to other companies that have important resources (Ireland et al., 2002).

Post-formation adjustments

Instability is one of the key problems of strategic alliances (Ariño and De La Torre, 1998; Das and Teng, 2000a; Reuer and Zollo, 2005). Once the contract has been signed, alliance partners have to coordinate their actions, to develop reciprocal trust and to avoid opportunistic behaviors⁹⁵. If something goes wrong⁹⁶, one or more partners could ask to redefine contractual clauses on the scope of the alliance, the division of labor and the share of the mutual benefits (Ariño and Reuer, 2004; Reuer et al., 2002). The negative effects of incomplete and ambiguous clauses are partly counterbalanced by relational aspects (Gulati and Nickerson, 2008; Puranam and Vanneste, 2009). Despite this fact, contractual re-negotiations could be as costly as contractual design (Ariño and Reuer, 2004; Reuer and Ariño, 2002). In this sense, perceived complexity could emerge even after the contract has been signed. As a consequence we have introduced items aimed at measuring the post-formation renegotiation of the contract.

5.4.4 Trialability

Trialability is simply the degree to which an innovation could be experimented on limited basis before its fully adoption (Rogers, 2003: 16). Typical examples of innovations with an high degree of trialability are agricultural ones (e.g. new seeds, fertilizers and weed killers). Farmers could first test these innovations on a limited number of hectares before extending their usage if they are satisfied. However, it will be misleading to simply conceptualize trialability as the possibility to use an innovation on a small scale. Tornatzky and Klein (1982) suggest to conceptually distinguish the possibility to experiment an innovation (i.e. trialability) from the scale of the test (i.e. divisibility). This distinction emerges from the fact that "a highly divisible innovation is usually highly trialable. However, not all trialable innovations are divisible as a trialable innovation may simply be a relative small, easily reversible, non radical innovation"(Tornatzky and Klein, 1982: 37). In other words, for non-divisible innovations what matters the most is the possibility to reverse (and to easily recover from) the adoption decision if the test is not satisfactory. Following this line of thought, we have translated the trialability of network contract as *the possibility to easily reverse the previous decision to adopt it*. Simply speaking, the perceived possibility to terminate the contract has a positive impact on adoption decision. Several scholars suggest to take into account the termination of the alliance in its designing phase (Ariño and Reuer, 2004; Hoffmann and Schlosser,

⁹⁵ Das (2005) claims that different deceitful behaviors depends on the combination of the probability do not obtain the desired goals (i.e. performance risk), the probability that the partner does not fully cooperate (i.e. relational risk) and the duration of potential adverse impact of deceitful behavior on inter-firm cooperation (Das, 2005: 707-708).

⁹⁶ Ariño and Reuer (2004) assert that contract renegotiations are more likely to emerge in presence of low contractual complexity and high asset specificity. Moreover, changes in the environment and in partner's strategy could affect the perceived strategic importance of the alliance leading to changes in the agreement.

2001). In addition, parts could define prerequisites, conditions and penalties under which each partner could unilaterally withdrawal from the contract. Clearly, partners could decide to terminate unilaterally the alliance for opportunistic reasons (Reuer and Zollo, 2005). There is a huge literature on how opportunistic behaviors, performance expectations, asset specificity and pre-defined alliance duration have an influence on the decision to exit from the alliance. In our discussion, we are more interested in how easy and cheap is perceived to exit from a network contract once it has been signed. In doing so, we have to consider that the duration is a compulsory element of a network contract, while the right to unilaterally withdrawal from the agreement is an optional one. Therefore, we have developed items to tap whatever withdrawing from the contract is perceived as easy and costly, independently from the specific investments. Moreover, we ask to adopters if the legislation on network contract protects a firm that decide to exit from the agreement.

5.4.5 Observability

Observability is the degree to which the results of the innovation are visible to others (Rogers, 2003: 16). Observability is a very complex construct as it includes two distinct ideas (Moore and Benbasat, 1991). The former idea refers to the fact that an innovation is visible. In this sense, Rogers claims that technological innovations are easier to study if compared to immaterial ones because of the 'hardware side' of the technology is clearly visible (Rogers, 2003: 13)⁹⁷. Simply speaking, it is simpler to adopt something that could be easily recognizable. The latter idea refers to the fact that innovation results are communicable to other members in the community. In other words, visible results facilitate the communication among peers and the flow of information in personal networks. Let's think about the previously discussed adoption of tractors by Indian farmers in substitution of horses. In this case, the innovation is visible as non-adopters could easily recognize the change. Moreover, the improved results of using a tractor (e.g time saving, improved plowing) are communicable to non-adopters. Scholars have debated for a long time if result communicability is an independent construct when compared to observability (Moore and Benbasat, 1991; Rogers, 2003; Tornatzky and Klein, 1982). Like similar quarrels in diffusion research, it'll probably never come to an end.

On this basis, we could say that potential adopters form a positive (or negative) attitude towards the results of an innovation in two different ways. First, they learn by directly observing the innovation and the related results. Second, they learn thanks to the comments of adopters that communicate their impressions on using the innovation. Clearly, this latter way to observe results directly

⁹⁷ This visibility of the innovation also explain why innovations with a predominant 'hardware' component will diffuse more rapidly than fully 'software' innovations (i.e. immaterial innovations) such as safer sex practices (Singhal and Rogers, 2002).

depends on the interactions among adopters and non-adopters. Following Moore and Benbasat (1991), in our study we define observability as *the degree of observability of network contract results coming from direct observation or from other information sources*.

Due to the fact that network contract is an immaterial innovation, it is difficult for potential adopters to directly observe the results. However, visibility could also emerge in a slightly different way. It has been claimed that "the more a potential adopter can see an innovation the more likely he is to adopt it. In fact, research has shown that the mere exposure [to objects] is capable of making an individual's attitude towards these objectives more positive" (Moore and Benbasat, 1991: 203). As a consequence, reports, newspapers articles, conferences and so on are valuable sources of information. Therefore, we have elaborated a set of items to tap the fact that useful knowledge could diffuse from trade associations, Chamber of Commerce and other institutions.

Moreover, managers and entrepreneurs (i.e. previous adopters) could share their experiences with non-adopters. Due to the fact that observability could be easily conflated with relative advantage, the related items do not include any word such as 'benefits', 'advantages', 'performance increases' in order to focus on result communicability.

5.4.6 Institutionalization

Institutionalization is the degree to which a practice, an activity or a behavior is increasingly integrated into social order thanks to its ability to self-reproduce without recurring to social mobilization (Colyvas and Johnson, 2011; Palmer et al., 2008). As a consequence, in measuring the institutionalization of a network contract, we consider *the extent to which it is perceived as a stable, accepted and suggested form of collaboration among Italian firms*.

It has been claimed that firms stipulating a strategic alliance could access to different types of legitimacy (Dacin et al., 2007):

- *market legitimacy*, obtained when an alliance is stipulated to access to rights and qualifications fundamental to operate in a given market possessed by already-legitimated partners;
- *relational legitimacy* reflects firm's worthiness to be perceived as a 'good' partner in order to attract other valuable partners in the future;
- *social legitimacy*, the legitimacy obtained using the social image of other partners in order to conform to expectations coming from external stakeholders (e.g. public interest groups, local communities and customers);
- *investment legitimacy* arises from the endorsement of the top management teams (i.e. board of directors, corporate executives) that the alliance will lead to good results;

- *alliance legitimacy* refers to the use of the agreement as an appropriate mean of cooperation in a given market. This latter form of legitimacy is a sort of pre-condition to access to other forms of legitimacy.

It is clear that market, relational, investment and social legitimacy motivations are aimed to increase *organizational legitimacy*, i.e. the acceptance of the organization among a given audience. As a consequence, we have already operationalized them as social benefits in the relative advantage construct. By contrast, alliance legitimacy is an attribute of the cooperation form, i.e. the degree to which *using* the alliance in a given context is perceived as proper, desirable and appropriate. Dacin and colleagues highlights that this situations "occurs in industries that lack a history of using alliances and that have always limited their form of business activity to pure competition, acquisition, or diversification" (Dacin et al., 2007: 178). In this stage of diffusion, Italian firms stipulating network contracts are contributing to make this contractual alliance as an appropriate and desirable mean to cooperate.

As we have discussed in a previous chapter, legitimacy is not equal to institutionalization. Legitimacy means that individuals and organizations follow a given behaviors following the desire to appear appropriate to an audience. By contrast, institutionalization means that the practice is self-reproducing thanks to its connection to cultural-cognitive frame. As a consequence, legitimacy need to be combined with taken-for-grantedness in order to lead to institutionalization. Simply speaking, taken-for-grantedness refers to immutability and un-questionability of a practice. The higher is the perceived taken-for-grantedness the lower are the possibilities to change or to question the practice as it is strongly and durably integrated in sources capable to grant its self-reproduction (e.g. the law, the professions, social shared identity categories, taken-for-granted aspects of everyday life). As a consequence, we have developed items to evaluate if network contract is perceived as a schema for guiding interaction among firms, a stable form of cooperation in business environment and a desirable and appropriate mean to cooperate.

5.5 Assessing content validity (Phase 2)

While in the previous phase we have developed a preliminary list of items on the existing literature, now we'll discuss these items to verify the extent to which they represent the intended constructs. According to our revised methodology, this procedure will help to eliminate or clarify redundant items.

In order to reach these goals, we have involved a group of consultants and lawyers with experience in stipulating a network contract. For instance, the items 'it is complicated to stipulate a network

contract' and 'firms stipulating a network contract are perceived as highly innovative' have been deleted because they were perceived as too ambiguous. It has also been suggested to re-label the construct 'institutionalization' with more understandable words for non-academic readers. Therefore, it was suggested to use the term 'normality in the use of network contract'. Similarly, the label for the construct 'observability' was perceived as too generic and it has been relabeled as 'observability of results obtained by firms already using the network contract'.

We have also discussed the resulting list of items with two statisticians and a scholar experienced in strategic alliance in order to refine even further the content validity. Thanks to these suggestions, we re-labeled compatibility as 'affinity' in our target constructs. It was correctly suggested that coherence refers to the continuity between past behaviors and current ones, while we are more interested in measuring the degree to which the network contract is perceived as affine with organizational values and past experiences.

5.6 First construct validity assessment (Phase 3)

In this phase we ask to four groups of judges to sort the items into construct categories. Depending on the round, judges could either be free to define their own categories or have to follow the target constructs. By using the item placement score technique and the Cohen's Kappa, this procedure allows us to constantly refine convergent and discriminant validity of our constructs.

In Moore and Benbasat (1991) the judges used to assess the perceived attributes of personal workstations had different backgrounds. The authors declare that "in all sorting rounds, a different set of judges was used. Each set included a secretary, an administrative clerk, student and professor. This range of backgrounds was chosen to ensure that a range of perceptions would be included in the analysis" (Moore and Benbasat, 1991: 200). In our research, we ask to Phd students and to experienced researchers in management and to consultants to be our judges. While the former category have been selected for their research skills and experience in crafting items and constructs, the judges in the latter category have direct contact with the business environment and, in several cases, they have helped firms to stipulate a network contract.

5.6.1 First round

In the first round we asked to four Phd students in our home university to be the judges. Before the beginning of the sorting round, we presented a set of instructions briefly explaining the aim and the expected outcome of the procedure. Then, we present the list of items sorted in a random way (i.e. not ordered by construct) and we asked them to define their own labels for the items. Table 1 synthesizes the constructs identified by the judges regrouped according to the most similar target

construct⁹⁸. As we can easily see, in certain cases the relation is clear. For instance, the labels 'economic advantages' and 'incentives' were aspects of the relative advantage construct that we have already identified while analyzing the literature. In more doubtful cases we have asked directly to the judges what they mean in order to correctly relate the emerging categories with the target constructs. Finally, we organized a panel session to further discuss the constructs.

Table 2: Constructs identified by the judges in the first round

	Judge A	Judge B	Judge C	Judge D
<i>Relative Advantage</i>	Advantages of signing the contract	State and regional benefits	Economic and social benefits	Performance improvements
		Economic advantages		Image improvements
		Social advantages		
<i>Compatibility</i>	Collaboration values and experiences	Coherence with past	Past experiences and future needs	Fit with firm (past experiences and needs)
		Need to collaborate		
<i>Complexity</i>	Negotiating the clauses	Stipulate and renegotiate the contract	Difficulties in finding partners and to agree (among partners)	Problems is stipulating the contract
				Problems in renegotiating the contract
<i>Trialability</i>	Withdrawal from contract	Ease to exit from the contract	Termination of the agreement	Closing the contract
<i>Observability</i>	Perception on results	Understanding the results obtained by others	Measurability of results	Availability of information (on results)
			Communicability of results	
<i>Institutionalization</i>	Diffusion of the contract	Normality in use	Acceptance in use	Diffusion and acceptability
	Importance of the contract			

Source: own elaboration

We then used the 'item placement score technique' to highlight how often the judges have correctly categorize the items in the target constructs. As previously discussed, the matrix contains the target constructs in the rows and the results of the sorting activity in the columns. We have also labeled a column as "not applicable" (N/A) to include those items that were not categorized in any target construct. The matrix diagonal contains the frequency of cases in which the items were correctly sorted in the target construct.

⁹⁸ For reasons of brevity in our discussion we'll use the following labels to refer to constructs: **RA** for 'relative advantage'; **CPT** for 'compatibility'; **CPL** for 'complexity'; **TR** for 'trialability'; **OBS** for 'observability'; **IST** for 'institutionalization'.

Table 3- Item placement score matrix in round 1

Constructs		ACTUAL						Total	% Hits	
		RA	CPT	CPL	TR	OBS	IST			N/A
TARGET	RA	39	1				2	2	44	89%
	CPT	2	24				2		28	86%
	CPL		1	13			2		16	81%
	TR			1	19				20	95%
	OBS	1				13		2	16	81%
	IST	6	1	2		1	17	9	36	47%
Item Placement		160								
Hits		125								
Overall "Hit Ratio"		78,13%								

Source: own elaboration

As we can easily see, the sum of the values in the diagonal is 125 on a total of 160⁹⁹. Therefore, the overall hit ration (i.e. percentage of items that were correctly sorted in the construct categories) is 78%. This result is essentially in line with the overall hit ration of Moore and Benbasat (1991). On this basis, we excluded some items in relative advantage and in compatibility constructs that were misinterpreted by the judges. However, the major issue refers to institutionalization with an hit ratio of only 47%. Therefore, we changed the description provided to the judges from "normality in the use of network contract" to "diffusion and integration of network contract in business activities". On this basis, we have re-written some items to stress the fact that network contract is a form of cooperation accepted and normally used in economic activities. As a consequence we have deleted those items that were not fitting with this definition (e.g. 'the Italian Government is supporting the diffusion of network contracts' or "stipulating a network contract helps to diffuse the culture of collaboration among Italian SMEs").

Finally, we use Cohen's Kappa coefficient to measure the inter-judge agreement in categorizing the items. Following Moore and Benbasat (1991), we first calculate Cohen's Kappa for each pair of judges using SPSS and then we calculate the average among them (i.e. average Cohen's Kappa). We obtained an average Cohen's Kappa of .69¹⁰⁰. Due to the absence of agreed level of required score for this test, we follow the commonly accepted rule of thumbs stating that scores greater than .60 are acceptable.

⁹⁹ The 'item placement' value is calculated multiplying the number of judges in the panel by the number of items in the construct. The 'total item placement' is simply the sum of the item placement values for all the constructs.

¹⁰⁰ The values of the six inter-judge agreements were: 0.699; 0.726; 0.699; 0.720; 0.617 and 0.668.

5.6.2 Second round

In the second round we repeated the procedure detailed in round 1 with other four Phd students in business and management from different Italian universities. First, we have asked them to sort the items according to the target constructs we provided using a questionnaire sent by email. An introductory section of the questionnaire contained the set of instructions previously used. Second, we organized a Skype call to discuss the results in a panel session. Using the items placement score technique (table 4) we obtained an overall hit ration of 80%.

Table 4 - Item placement score matrix in round 2

Constructs		ACTUAL							Total	% Hits
		RA	CPT	CPL	TR	OBS	IST	N/A		
TARGET	RA	38					2		40	95%
	CPT	4	17	3	2		2		28	61%
	CPL		2	16	2		2	2	24	67%
	TR			3	16			1	20	80%
	OBS					16			16	100%
	IST	1	1			1	19	2	24	79%
Item Placement		152								
Hits		122								
Overall "Hit Ratio"		80,26%								

Source: own elaboration

We can easily see that the definition of institutionalization introduced in round 1 has substantially improved the corrects hits. By contrast, the changes introduced in the 'compatibility' lead to a drop in the hit ration from 86% to 61%. This problem is essentially related with the following items: "Network contract has allowed to stipulate collaboration agreements that I was not able to stipulate before" and "Network contract is the collaboration tool that better fits the cooperation needs of my firm". We decided to drop both of these items as they are perceived as too ambiguous (i.e. the items were sorted in relative advantage, institutionalization and even trialability). Finally, the average Cohen's Kappa coefficient scores at .653. Even in this case the statistical average statistical index is fully acceptable.

5.6.3 Third round

In the third round, the judges were four business consultants. The procedure is essentially similar to that applied in the previous rounds. Again, we used the items score technique (table 5) and Cohen's Kappa to refine our constructs. The overall item ratio reaches an acceptable 73%. Similarly,

Cohen's Kappa average coefficient reached an average value of .503 signaling a fairly good agreement among judges

Table 5 - Item placement score matrix in round 3

Constructs		ACTUAL						Total	% Hits		
		RA	CPT	CPL	TR	OBS	IST			N/A	
TARGET	RA	31	1			5	3		40	78%	
	CPT	1	16			1		2	20	80%	
	CPL		3	16		1		4	24	67%	
	TR			3	14			3	20	70%	
	OBS	2				12		2	16	75%	
	IST		1			2	19	6	28	68%	
Item Placement		148									
Hits		108									
Overall "Hit Ratio"		72,97%									

Source: own elaboration

Based on these results and on the discussion with the consultants, we have improved the constructs as follows:

- (1) **RELATIVE ADVANTAGE**: we dropped the items stating that "network contract makes me appear a cutting edge firm" and that "signing a network contract allows me to access to greater public grants than other forms of cooperation". Both of these items received a very poor hit ratio. Moreover, we excluded an item referring to regional incentives as consultants pointed out that these incentives were not issued in Friuli Venezia Giulia, i.e. the geographical context of our research;
- (2) **COMPLEXITY**: we dropped two items stating that "network contract legislation makes simpler to stipulate a collaboration agreement" and "it is easier to stipulate an agreement with firms with I had previous experiences of collaboration". We decided to eliminate these items as they displayed a disappointing low correct placement ratio in both round two and round three;
- (3) **TRIALABILITY**: we dropped the item stating that "it is easier to withdraw from a network contract once it has been stipulated" due to the fact that consultants perceived it as too generic. In essence, entrepreneurs will always agree with this statement. We also cancelled the item claiming that "independently from the specific investments, it is expensive to withdraw from the contract". This latter item scored a very low hit placement;
- (4) **INSTITUTIONALIZATION**: we dropped the items stating "network contract is currently used by Italian firms to stipulate strategic alliances" and "network contract is substituting

other cooperation forms". Given the current diffusion, these statements were perceived as too premature. Moreover, we deleted the item stating that "there will be a great opposition if the network contract legislation will be cancelled" as it was perceived as too confusing.

5.6.4 Fourth round

In this final round, we have sent the on-line questionnaire to a list of Italian management consultants, business consultants, lawyers and notaries with experience in stipulating network contract. The list was kindly provided by the judges involved in round 3. We have sent by email 20 on line questionnaires and we received 6 responses¹⁰¹. We obtained a value of 86% for the overall hit ration (table 6) and a value of .77 for the average Cohen's Kappa coefficient.

Table 6 - Item placement score matrix in round 4

Constructs		ACTUAL						Total	% Hits	
		RA	CPT	CPL	TR	OBS	IST			N/A
TARGET	RA	43				4		1	48	90%
	CPT	1	21					2	24	88%
	CPL			19	3		1	1	24	79%
	TR	2			15			1	18	83%
	OBS	1				22		1	24	92%
	IST					2	25	3	30	83%
Item Placement		168								
Hits		145								
Overall "Hit Ratio"		86,31%								

Source: own elaboration

After this process, we obtained a final list of 26 items (see table 7 for a synthesis).

5.7 Scale reliability assessment and construct validity (Phase 4)

Before starting our discussion, we want just to recall that Moore and Benbasat (1991) perform a preliminary scale reliability assessment on the results of their two pilot tests. In particular, Cronbach's ALPHA and Guttman's Lower Bounds (GLB) were used to exclude those items that could undermine scale reliability. On this basis, the remaining items were sent to a great number of adopters to perform the field test. Using these data, the authors evaluate construct validity (using principal component analysis) and scale reliability (using Cronbach's ALPHA and Guttman's Lower Bounds (GLB)). Admittedly, in published articles it is quite common to find only this latter phase

¹⁰¹ Due to the fact that respondents were from different Italian regions, we have decided to not arrange a panel session in this round.

of the analysis. In order to assess scale reliability and construct validity of our instrument, we have sent a questionnaire to all the adopters of network contract in Friuli Venezia Giulia and to eastern part of Veneto. We obtained 54 responses. Due to the limited number of responses, in our analysis the pilot tests and the final field test will coincide. Therefore, we'll first analyze construct validity and then verify scale reliability using Guttman's Lower Bounds (GLB) and Cronbach's ALPHA.

Table 7 - Items divided in constructs after first construct validity assessment

Construct	Items in the construct
<i>Expected Economic Benefits</i>	(EB1) "Incremento del fatturato"; (EB2) "Miglioramento del reddito aziendale"; (EB3) "Miglioramento tasso rendimento capitale investito"; (EB4) "Accesso a maggiori sgravi fiscali".
<i>Expected Social Benefits</i>	(SB1) "Far percepire l'azienda come più collaborativa in vista di futuri accordi"; (SB2) "Miglioramento dell'immagine aziendale"; (SB3) "Miglioramento della reputazione aziendale"; (SB4) "Far percepire incremento dimensioni aziendali"; (SB5) "Rendere evidente il legame con i partner del contratto".
<i>Perceived complexity</i>	(CPL1) "Fosse difficile partner che volessero stipulare contratto di rete"; (CPL2) "Negoziazione il contratto di rete fosse dispendioso in termini di tempo e risorse"; (CPL3) "Sarebbe stato complesso rinegoziare le clausole del contratto di rete"; (CPL4) "Una eventuale rinegoziazione delle clausole contrattuali comporterà molto tempo e risorse".
<i>Perceived compatibility</i>	(CMP1) "Il contratto di rete fosse coerente con le passate esperienze di collaborazione"; (CMP2) "Le sue passate esperienze di collaborazione sarebbero state utili per stipulare il contratto di rete"; (CMP3) "Il contratto di rete fosse coerente con i valori di collaborazione della sua azienda".
<i>Perceived Trialability</i>	(TR1) "Il contratto di rete rende agevole recedere dall'accordo"; (TR2) "Avrebbe potuto uscire agevolmente dall'accordo prima della durata indicata nello stesso"; (TR3) "La facoltà di dettagliare le clausole di recesso anticipato rendesse avrebbe reso agevole uscire dall'accordo".
<i>Result Observability</i>	(OBS1) "Iniziativa associazione di categoria"; (OBS2) "Iniziativa camera di commercio locale"; (OBS3) "Consulenti aziendali che già avevano stipulato contratti di rete"; (OBS4) "Stesse aziende che avevano già stipulato un contratto di rete".
<i>Perceived institutionalization</i>	(IST1) "Collaborare usando il contratto di rete fosse ormai una pratica consolidata nel mondo del business"; (IST2) "Il contratto di rete fosse una forma di collaborazione consolidata nel settore industriale (artigianale)"; (IST3) "Il contratto di rete fosse una forma di collaborazione comunemente utilizzata nel settore industriale (artigianale)".

Source: own elaboration

5.7.1 Construct validity

In order to assess construct validity we'll use factor analysis, a family of statistical interdependence techniques whose primary purpose is to define the underlying structure existing among variables (Hair et al., 2009). Factor analysis could be either used to confirm the existence of a pre-specified structure (confirmatory factor analysis) or to verify the existence of an underlying structure (exploratory factor analysis). While in the former case it is preferable to use structural equation modeling, in the latter the absence of any *a priori* constrain on the expected components makes factor analysis more suitable (Hair et al., 2009). Following Moore and Benbasat (1991), we have chosen to use an exploratory factor analysis. There are two statistical methods to extract factors:

- *principal component analysis* (or *component analysis*), whose aim is to identify the minimum number of factors capable to account for the maximum portion of variance existing among the variables. In this method the diagonal of the correlation matrix contains values of 1.0 in order to include all the full variance in the factor matrix;
- *common factor analysis*, whose aim is to identify latent dimensions (or constructs) reflecting what the variables share in common. In this method the diagonal of the correlation matrix contains communalities (i.e. the common variance among the variables) rather than the full variance.

Due to the several statistical problems emerging while applying common factor analysis (Hair et al., 2009: 106-107), we choose to use principal component analysis to evaluate construct validity¹⁰². In doing so, we'll investigate how the items aggregate into factors (i.e. group of items that are highly correlated with each other) by using the correlation matrix calculated among variables¹⁰³.

In order to perform a meaningful factor analysis, we first have to take into account two aspects. The first aspect refers to the sample size. Even though the number of observations to perform a factor analysis should be as bigger as possible, it has been claimed that 50 observations are sufficient to perform a factor analysis (Hair et al., 2009). The second aspect relies on the homogeneity of the sample being investigated. Simply speaking, different factors analysis have to be performed if we expect that item responses are influenced by the different groups in which the sample could be divided (e.g. male/female). In our research setting, the 55 responses meet the minimum threshold to perform a factor analysis and constitute an homogeneous set of observations (Hair et al., 2009). However, due to the fact that our sample falls in the interval 50-100 cases we have to interpret the results with caution.

On this basis, we need to verify that the data matrix has sufficient correlations to justify the application of a principal component analysis. In doing so, we could use the following tests:

- (1) *Visual inspection of the correlation matrix*: in order to produce meaningful results, the correlation matrix need to display some correlations greater than .30 between the variables that will be included in the analysis;
- (2) *Bartlett's test of sphericity*: a statistically significant p-value below .05 means that a sufficient correlation to perform factor analysis exists among at least some of the variables;

¹⁰² Hair and colleagues (2009) also claim that "component analysis and common factor analysis arrive at essentially identical results when the number of variables exceed 30 or the communalities exceed .60 for most variables. If the researcher is concerned with the assumptions of component analysis, then common factor analysis should also be applied to assess its representation on structure"(p. 107).

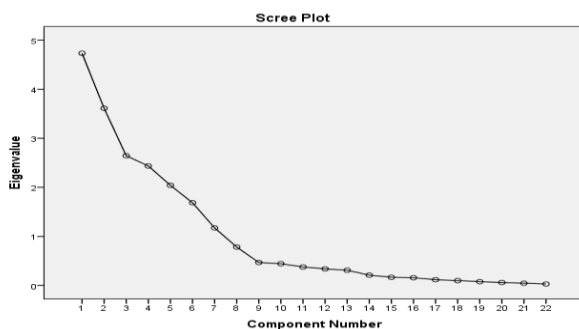
¹⁰³ In our discussion we'll refer to factor analysis using the correlation matrix among variables to extract factors (R factor analysis). As a general technique, factor analysis could also be applied to study the characteristics of individual respondents to categorize them into homogeneous groups (Q factor analysis).

(3) *Measure of Sampling Adequacy (MSA)*: the values of the overall test must exceed .50. If a group of variables have a value less than .50, they should be omitted from the factor analysis one at a time.

In our research, the visual inspection of the correlation matrix reveals that more than 35 correlations have a value superior to .30, which provides an adequate basis to an empirical examination of factor analysis. Moreover, the Barlett's test suggests that correlations are significant at the .0001 level. In addition, the overall MSA scores at .586 following in the range of acceptability. Despite these good values, we find that four variables display an individual MSA well below the acceptability threshold. These variables have the following labels: (EB4), (SB5), (CPL1) and (OBS4)¹⁰⁴. Therefore, we excluded these variables from the analysis and we re-calculated the tests. The number of correlations, the Barlett's test, the overall MSA and the individual MSA support the idea the reduced set of variables is suitable to perform a principal component analysis¹⁰⁵.

Using the latent root criterion, the results indicate that a seven-factor solution was the most likely cut-off accounting for approximately 83% of the variance. This value satisfy the criteria according to which more than the 60% of the variance should be explained while performing principal component analysis. The scree plot also shows a break after the eight factor (see figure 1). One could argue that the difference existing among these two factor-selection criteria could signal the absence of an underlying structure of the data. Two counter-arguments could be used against this claim. First, the possibility to compare and contrast different factor-selection criteria allow to identify the 'correct' number of factors boiling down the data (i.e. the most representative set of factors). Second, "as a general rule the scree test results in at least one and sometimes two or three more factors being considered for inclusion that does the latent root criterion" (Hair et al., 2009: 120). On this basis, we can conclude that the best representation of the data is seven.

Figure 1 - Scree test for component analysis



¹⁰⁴ The values of MSA are respectively .352, .473, .273 and .383.

¹⁰⁵ In particular, the MSA scores increases at .635. Each single variable displays an individual MSA greater than .50.

In order to perform the factor analysis, we use VARIMAX rotation. As a general rule, an high loading suggests that a variable is highly representative of a given factor. However, this general statement has to be compared with practical and statistical significance. Loading values greater than $\pm.50$ are generally considered to be practically significant¹⁰⁶, while statistical significance depends on the sample size used in the analysis. Based on a power level of 80% and a significance level of .05, a factor loading of .75 -.70 is required to be considered as statistically significant with a sample of 55 units of analysis (Hair et al., 2009).

The rotated factor matrix (see table 8) highlights that a seven factor structure clearly emerge. We could note that each item tends to load highly on the target factor with statistically significant values. Only the item (SB4), with a factor loading of .629, seems to display a value below the required threshold. However, we can note that the value of communality for (SB4) is greater than the requested value of .50. Moreover, the item does not cross-load on other factors or display a complex structure (i.e. it displays correlations greater than .40 on more than one factor). In addition, it has been highlighted that "as the number of variables being analyzed increases, the acceptable level for considering a loading significantly decreases" (Hair et al., 2009: 130). On this basis, we decide to retain the item (SB4) in the analysis.

To sum up, a fairly simple structure in the factors seems to emerge. The items load on the target factor, with the lowest loading scoring at .63. Moreover, no significant cross loading is present. Despite these good results, we have to take into account the relatively low cases-per-variable ratio. This fact increases the chances of data over-fitting, i.e. deriving factors that are sample specific with little generability to an entire population. However, our analysis was performed on a limited number of industrial firms that have adopted network contract in Friuli Venezia Giulia and in the Eastern part of Veneto, i.e. a relatively homogeneous context useful to study its early diffusion using fsQCA approach. Due to the fact that only 85 firms have signed the contract until April 2013, we have interviewed a substantial percentage of the adopters (i.e. 65%).

We also verified the quality of responses testing the absence of the common method bias and the non-response bias. In the former case, we used Herman's single factor test. If self-reported data are seriously affected by this bias, a single latent factor accounts for a great portion of the variance. By constraining the number of extracted factors in the analysis to one, the un-rotated solution displays that the single factor account only for the 21% of the variance in the model. In the latter case, we use firms characteristics provided in the list of network contracts to verify that no significant difference exists between respondents and non-respondents. Therefore, we cross-tabulate the group of respondents against the ATECO code of the firms, their province and the year in which they

¹⁰⁶ We highlight that factor loadings from $\pm.30$ to $\pm.40$ are considered to be minimally acceptable.

adopted the contract. No statistically significant difference emerges from the analysis, with the exception of the respondents and non-respondents in the province of Udine. In this latter case, we obtained an above-the-average rate of responses.

In conclusion, we can say that, at the moment, our instrument is well-suited to measure the perceived attributes of network contract in our research setting. As a future development, the field test could be replicated to include more industrial firms operating in other Italian regions.

Table 8 - VARIMAX rotated component analysis factor matrices

Rotated Component Matrix								Communalities
	Component							
	1	2	3	4	5	6	7	
IST_2	,960	,104	-,055	,053	-,001	,081	,089	,953
IST_3	,955	,038	-,038	,008	,009	,006	,129	,932
IST_1	,937	,094	-,030	,091	-,185	,103	,044	,943
TR_1	,079	,942	,017	,072	,046	,175	-,016	,933
TR_2	,093	,927	,056	,035	,189	,053	,012	,910
TR_3	,061	,919	-,071	,097	,113	,139	-,042	,897
EB_2	-,020	-,109	,916	-,077	,045	-,013	,057	,863
EB_3	-,062	,050	,907	,007	,195	,085	-,015	,875
EB_1	-,039	,072	,876	,034	,184	,105	,117	,834
SB_2	-,011	,089	-,125	,894	,035	,257	,032	,891
SB_3	,029	,060	-,163	,844	,133	,182	,084	,801
SB_1	,148	,243	,047	,775	-,220	,042	,173	,764
SB_4	,022	-,134	,260	,629	,230	,050	-,088	,544
CMP_2	-,077	,078	,035	,065	,929	,011	,130	,898
CMP_1	,076	,182	,164	,064	,861	-,069	,120	,831
CMP_3	-,177	,100	,277	,030	,747	-,032	,053	,681
CPL_4	,010	,130	,097	,235	-,084	,880	,050	,865
CPL_3	,100	,208	,129	,253	,062	,847	-,053	,857
CPL_2	,087	,056	-,025	,028	-,055	,838	,231	,771
OBS_2	,076	-,039	,013	-,039	,148	,053	,874	,797
OBS_3	,007	,086	,001	,030	,172	,114	,829	,738
OBS_1	,190	-,103	,154	,191	-,052	,048	,796	,745

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

5.7.2 Scale reliability

We also perform a test to evaluate the reliability of the scale for each construct (see table 9). For instance, the value of Alpha for the items in the 'expected social benefits' and compatibility are respectively .911 and .843, well above the lower level of acceptability of .60. Similarly, the values of GLB are superior to the threshold of .70.

Table 9 - Cronbach's Alpha and Guttman's LowerBounds (GLB) for each construct

Construct	Items in the construct	Cronbach's ALPHA	GLB
<i>Expected Economic Benefits</i>	(EB1) "Incremento del fatturato"; (EB2) "Miglioramento del reddito aziendale"; (EB3) "Miglioramento tasso rendimento capitale investito".	.911	.813
<i>Expected Social Benefits</i>	(SB1) "Far percepire l'azienda come più collaborativa in vista di futuri accordi"; (SB2) "Miglioramento dell'immagine aziendale"; (SB3) "Miglioramento della reputazione aziendale"; (SB4) "Far percepire incremento dimensioni aziendali".	.776	.776
<i>Perceived complexity</i>	(CPL2) "Negoziare il contratto di rete fosse dispendioso in termini di tempo e risorse"; (CPL3) "Sarebbe stato complesso rinegoziare le clausole del contratto di rete"; (CPL4) "Una eventuale rinegoziazione delle clausole contrattuale comporterà molto tempo e risorse".	.871	.819
<i>Perceived compatibility</i>	(CMP1) "Il contratto di rete fosse coerente con le passate esperienze di collaborazione"; (CMP2) "Le sue passate esperienze di collaborazione sarebbero state utili per stipulare il contratto di rete"; (CMP3) "Il contratto di rete fosse coerente con i valori di collaborazione della sua azienda".	.843	.843
<i>Perceived Trialability</i>	(TR1) "Il contratto di rete rende agevole recedere dall'accordo"; (TR2) "Avrebbe potuto uscire agevolmente dall'accordo prima della durata indicata nello stesso"; (TR3) "La facoltà di dettagliare le clausole di recesso anticipato rendesse avrebbe reso agevole uscire dall'accordo".	.950	.851
<i>Result observability</i>	(OBS1) "Iniziativa associazione di categoria"; (OBS2) "Iniziativa camera di commercio locale"; (OBS3) "Consulenti aziendali che già avevano stipulato contratti di rete".	.808	.805
<i>Perceived institutionalization</i>	(IST1) "Collaborare usando il contratto di rete fosse ormai una pratica consolidata nel mondo del business"; (IST2) "Il contratto di rete fosse una forma di collaborazione consolidata nel settore industriale (artigianale)"; (IST3) "Il contratto di rete fosse una forma di collaborazione comunemente utilizzata nel settore industriale (artigianale)".	.964	.960

Source: own elaboration

5.8 Conclusion

In this chapter we have developed an instrument capable to measure the perceived attributes of a network contract. While Rogers' framework is flexible enough to be applied to both material and immaterial innovations, it is the first time that it has been used to study the process of diffusion of a new form of strategic alliance. By critically reviewing the well-accepted procedure used to measure the perceived attributes of an innovation (Moore and Benbasat, 1991), we have highlighted several of its weaknesses. First, the possibility to easily replicate the methodology in other research contexts is undermined by some confusion among phases. Second, different aspects to assess the goodness of measures are sometimes mixed together (e.g. construct validity and contend validity). Third, the relevance of the panel of judges in assessing construct validity is unclear. Therefore, we have presented a revised version of the methodology used to measure the perceived attributes of an innovation.

By using strategic alliance and network contracts literatures, we theoretically developed a set of items to measure the perceived attributes of the new form of strategic alliance. On this basis, we have asked to a group of experts to help refining items' content and construct validity. We have sent a questionnaire to the industrial firms that have adopted network contract in Friuli Venezia Giulia and in the Eastern part of Veneto and we have performed a principal component analysis on the responses. The result is a parsimonious and reliable instrument formed by 22-items articulated in seven constructs: expected economic benefits, expected social benefits, perceived compatibility, perceived complexity, perceived trialability, result observability and perceived institutionalization. These constructs can now be used to investigate how the perceived attributes of network contract combine to explain the earliness of adoption.

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Chapter 6

CONFIGURATIONAL COMPARATIVE METHODS AS A NEW WAY TO SHED LIGHT ON CAUSAL COMPLEXITY

In this chapter we present Configurational Comparative Methods (CCMs) and we explain how they could be used to better understand causal complexity in adoption decisions. After a brief section clarifying the acronyms used in CCMs (section 6.2), we discuss the logical foundations of these methods (section 6.3). We also provide an up-to-date review of the existing techniques, namely crisp set (csQCA), multi value (mvQCA) and fuzzy set (fsQCA) (section 6.4). On this basis we discuss the potentialities of these methods in explaining how the perceived characteristics of an innovation combine in adoption decisions (section 6.5).

6.1 Introduction

In late eighties Configurational Comparative Methods (CCMs) emerged as a solution to cope with those research situations in which the units of analysis were too small to apply statistical techniques and too big to use in-depth case studies (Fiss, 2008; Ragin, 1987; Ragin, 1997; Ragin, 2000; Schneider and Wagemann, 2012). The basic idea was to develop as a synthetic strategy to integrate the best features of both qualitative and quantitative research traditions (Ragin, 1987). This idea was constantly been refined and implemented in software tools capable to stimulate a more fruitful dialogue between theory and evidence (Ragin, 2000). Despite these potentialities, it has took more than 20 years to CCMs to become more than a methodological niche (Rihoux et al., 2013). Vaisey (2009) ironically claims:

"Beyond the fact that its complexity makes QCA more demanding to use correctly, Ragin has faced as all third party candidates do an uphill battle against institutional inertia. The norms of graduate training and our regular rituals of self-identification (e.g., quantoid, ethnographer) create subtle disincentives to investing in a "third way." (Plus, why spend 15 percent of your word count explaining QCA when typing "logistic regression" is so much more economical?)" (Vaisey, 2009: 311)

Admittedly, organization and strategic management research fields are latecomers in the use of CCMs compared to political science, sociology and anthropology (Fiss et al., 2013c). Despite this fact, the number of publications is constantly growing. CCMs have been applied to investigate cross-level comparison (Lacey and Fiss, 2009), governance structures (Kogut and Ragin, 2006), firm performance (Greckhamer et al., 2008; Kogut et al., 2004), organizational design (Bakker et al., 2011; Grandori and Furnari, 2008; Grandori and Furnari, 2013) and to classify organizations on multiple dimensions (i.e. the creation of typologies) (Fiss, 2007; Fiss, 2011; Fiss et al., 2013b; Kennedy and Fiss, 2013). In addition, configurational methods have proven to work well to identify complex configurations of causal relations explaining why organizations adopt, decouple or implement practices following external pressures (Bromley et al., 2012b; Crilly et al., 2012).

In this chapter we want to review these innovative techniques and to explain how they could be applied to study diffusion. We first clarify the definitions and the labels used in configurational comparative methods (section 6.2). Then, we discuss the logical foundations of a comparative research design (section 6.3). On this basis, we review the three main techniques used to implement such design: crisp set qualitative comparative analysis (csQCA), multi value qualitative comparative analysis (mvQCA) and fuzzy set comparative analysis (fsQCA) (section 6.4). On this basis, we discuss how CCMs could shed new light on the causal complexity embedded in adoption decisions (section 6.5).

6.2 Everybody has a different definition of Configurational Comparative Methods

One of the major problems we have found in reading CCMs papers is the great number of labels and acronyms used. It seems that everybody has a different definition of what CCMs are. In order to avoid such confusion, we start our discussion by presenting a brief review of the several meanings attached to the label 'Configurational Comparative Methods'. Following the recent contribution of Rihoux and Ragin (2008) we use such label as an higher-order term to identify the family of techniques developed from the seminal contribution of Ragin (1987). These techniques are crisp set qualitative comparative analysis (csQCA), multi-value qualitative comparative analysis (mvQCA) and fuzzy set comparative qualitative analysis (fsQCA). This distinction is important as, for more than 15 years, the term 'Qualitative Comparative Analysis' was used to identify a research approach, a set of data-analysis techniques and a group of software tools¹⁰⁷ (Rihoux and Lobe, 2008; Rohwer, 2011; Wagemann and Schneider, 2010a). In particular:

- as an approach, qualitative comparative analysis refers to "the iterative process of data collection, model specification, case selection and re conceptualization of the conditions and the outcome which are of central importance for any QCA-based research design" (Wagemann and Schneider, 2010b: 2). This approach was intentionally designed with the aim to "integrate the best features of the case oriented approach with the best features of the variable-oriented approach" (Ragin, 1987: 84). The label QCA was used to highlight that the approach allowed some operations that were strictly forbidden in quantitative research¹⁰⁸, namely the possibility to combine the in-deep knowledge on a case with the possibility to

¹⁰⁷ Some degree of confusion also emerge as the acronym QCA is differently translated. In particular, French speakers "translates QCA with 'AQQC' ('Analyse quali-quantitative comparée'). Contrary to this, 'QCA' is usually not traduced in other European languages (such as German, Italian and Spanish); therefore, the acronym is also kept in these languages" (Wagemann and Schneider, 2010b: 10)

¹⁰⁸ Similarly, Rihoux and Lobe (2008) note that Ragin used the label 'qualitative' to help researchers to bear in mind that the units of analysis are cases (i.e. complex and specific combination of features) (Rihoux and Lobe, 2008: 225).

generalize results emerging from a systematic cross-case comparison (Ragin, 2008c; Wagemann and Schneider, 2010b);

- as a technique, the acronym QCA was used to identify crisp set QCA (csQCA). In csQCA, the term "qualitative comparative analysis" identifies the analytical moment in which the units of analysis are systematically compared using standardized algorithms implemented in an appropriate software (Ragin, 2000).

This tradition was still in use during the eighties and the nineties when several techniques based on Ragin (1987) intuition were developed: fuzzy sets QCA(fsQCA), multi value QCA (mvQCA), 'most similar, different outcome' (MSDO) and 'most different, similar outcome' (MDSO). All those variants of QCA are still considered a case-sensitive and holistic approach (Berg-Schlusser et al., 2008), even though they are designed to investigate different research problems. Despite this fact, the acronym QCA is still commonly used to identify all these techniques and the research approach as a whole (Rihoux, 2006; Rihoux and Lobe, 2008; Rihoux and Ragin, 2008).

In our discussion we'll use the label CCMs to identify the research approach and the family of techniques as a whole, while we'll refer to a specific technique using the labels mvQCA, fsQCA and csQCA. We admit that such distinction is not well-institutionalized yet (Schneider and Wagemann, 2012; Wagemann and Schneider, 2010b). For instance, Schneider and Wagemann (2012) prefer the term 'set theoretic methods' as "it is more encompassing and emphasizes the core analytic fact that all of them model social society in terms of set-theoretic relations. It is the set-theoretic foundation from which all other features of this family of methods derive" (Schneider and Wagemann, 2012: 7). However, in social sciences several other methodological tools apply set-theory to perform comparative analysis¹⁰⁹ (e.g. Mill's methods and typological theories). On this basis, we prefer to use the label CCMs to avoid further confusion on the use of labels.

On this basis, in the next section we'll discuss the key assumptions supporting the idea that CCMs are extremely valuable to study causal complexity and equifinality. In doing so, we'll make explicit the logical foundations on which CCMs have been constructed.

6.3 The logical foundations of Configurational Comparative Methods

In order to identify causal relations capable to explain social phenomena, in social sciences it is common to use statistical techniques based on linear algebra. These techniques separately measure the contribution of each independent variable (i.e. each cause) in explaining the variation of the dependent variable. In this sense, linear regression techniques tend to equate 'explanation' with

¹⁰⁹ In comparison to these approaches, CCMs are characterized by the possibility to provide causal interpretations, by the use of truth tables and by the systematic use of logical minimization (Schneider and Wagemann, 2012).

'explaining variation' (Ragin, 1997: 4). In order to identify the 'best' combination of independent variables predicting the variation of the dependent one, these statistical techniques assume causal additivity (i.e. each independent variable explains a part of the total variance), causal independence (i.e. each statistically significant cause is capable to influence the outcome) and causal uniformity (i.e. each independent variable has always either a positive or negative effect on the dependent one) (Ragin and Sonnett, 2004).

Configurational scholars simply warn to ask to linear algebra something that is beyond its possibilities. Due to the fact that statistical techniques based on linear algebra have been developed to identify *the* causal model that better fits the data (i.e. model unifinality), they do not adequately take into account causal complexity. Causal complexity refers to the simultaneous co-presence of meaningful and alternative 'causal paths' leading to the same outcome. One could argue *why* understanding causal complexity is so relevant. Rihoux and Lobe (2008) synthesize this importance as follows:

"(1) most often, it is a combination of conditions (independent or 'explanatory' variables) that eventually produces a phenomenon – the outcome (dependent variable, or phenomenon to be explained); (2) several different combinations of conditions may produce the same outcome; and (3) depending on the context, a given condition may very well have a different impact on the outcome" (Rihoux and Lobe, 2008: 224)

It seems like that the extensive use of linear algebra have greatly reduced the importance of causal complexity in social science research (Schneider and Wagemann, 2006: 754). By contrast, configurational scholars assume causal complexity "and then mount an assault on that complexity" (Ragin, 1987: x). In other words, they acknowledge that different combination of causal conditions (i.e. configurations) could lead to the same outcome (i.e. equifinality), that the configurations explaining the presence of the outcome are not necessarily the same for its absence (i.e. asymmetric causation) and that a single condition can play a different role while included in different configurations (i.e. multifinality) (Berg-Schlosser et al., 2008; Schneider and Grofman, 2006; Wagemann and Schneider, 2010a). Three are the main features that allow the analysis of causal complexity in CCMs. First, CCMs are constructed to analyze set relationships rather than co-variation using mathematical algorithms based on Boolean algebra (Berg-Schlosser and De Meur, 2008; Ragin, 1987). In Boolean algebra, the causal conditions and the outcome of interest are subsets, supersets or equivalent sets of each others. Second, CCMs help researchers to be very 'transparent' in their research decisions that always have to be justified from an empirical and theoretical point of view (Rihoux, 2006: 684). Third, CCMs have strong roots in the property-space approach proposed in Lazarsfeld (1937). A property space identifies all the logically possible combinations of attributes (causal conditions) that could lead to an outcome of interest, i.e. it identifies all logically possible configurations of causal conditions (Lazarsfeld, 1937; Ragin, 2000).

Therefore, CCMs are valuable tools "to map the logically possible configurations (i.e., the property space) of a priori selection of theoretically relevant causal attributes underlying an outcome, and the empirically observed and unobserved configurations within this space, thereby enabling an analysis of the determinants of an outcome" (Greckhamer et al., 2008: 699).

On this basis, we'll now turn to discuss the logical cornerstones of CCMs: necessary and sufficient conditions; set-theoretic consistency; set-theoretic coverage; contradictory configurations; limited diversity. All these elements are shared by all the CCMs techniques that we'll discuss in section 6.4.

6.3.1 Necessary and sufficient conditions

CCMs are able to model high levels of causal complexity and to identify meaningful causal relations among sets thanks to the identification of necessary and sufficient conditions (Fiss, 2007). A *sufficient condition* emerges when a cause can produce a certain outcome by itself (Ragin, 1987: 99). On this basis, the following logical statements could be made:

1. if we know that the sufficient condition is present, then we are sure that the outcome is also present. Therefore, we also expect that no cases will simultaneously display the presence of the condition and the absence of the outcome;
2. if we know that the outcome is present, we cannot make any assertion on the presence of the condition. This logical implication emerges from the fact that a sufficient condition is a subset of the outcome being investigated (Wagemann and Schneider, 2010b). If the set of the causal condition does not completely cover the area of the outcome set (i.e. the condition is not simultaneously sufficient and necessary for the outcome), then several other subsets representing alternative sufficient conditions could explain the outcome;
3. if we know that the sufficient condition is not present, then we cannot make any assertion on the presence/absence of the outcome. This logical statement can be easily understood by recalling that the presence of a causal condition can be qualitatively different from its absence¹¹⁰. Therefore, the cases in which the condition is absent, even if they are empirically observed, are irrelevant in the analysis of sufficiency for the presence of the outcome. In order the conditions sufficient to explain the absence of the outcome, we need to re-run the entire analysis.

¹¹⁰ For instance, a 'small firm' is not necessarily a 'big firm'. A firm with less than 50 employees has clearly non-membership in the set 'big firms', but this non membership does not automatically imply that the company is 'small' (e.g. it could be medium-sized).

A *necessary condition* emerges when a cause must be present for a certain outcome to occur¹¹¹ (Ragin, 1987; Wagemann and Schneider, 2010b). In this sense, a necessary condition is a superset of the outcome of interest (i.e. it is graphically represented by an higher-order set of the outcome of interest) (Ragin, 2000). Due to the fact that the set of the outcome is fully included in the set of the condition, there are some units of analysis displaying the causal condition but not the outcome (i.e. the causal condition is necessary, but not also sufficient for the outcome). On this basis, the following logical statements could be derived:

- i. if we know that the outcome is present, then we are sure that the necessary condition is always present. Therefore, it is impossible to find cases in which the outcome is present and the causal condition is absent (i.e. the causal condition is necessary to reach the outcome);
- ii. if we know that the outcome is absent, then we cannot make any assertion on the presence/absence of a necessary causal condition. In other words, cases not displaying the outcome are irrelevant in the analysis of necessary conditions (Braumoeller and Goertz, 2000; Fiss, 2007).

The use of necessary and sufficient conditions could also be applied to study *combinations of causal conditions*. In other words, "research reality will provide us with conditions which are sufficient and necessary only in combination with other conditions ('conjunctural causation') or which are only one alternative among others that only apply to some cases but not to others ('equifinal causation')" (Wagemann and Schneider, 2010b: 4). Due to the fact that in CCMs causal conditions do not compete with each other in explaining the outcome of interest (as they do in linear algebra), researchers are able to identify alternative configurations and, for each of them, the conditions that are necessary and sufficient within a single configuration. This advanced analysis of causal complexity leads to the identification of the so-called *INUS* and *SUIN* conditions. An *INUS* condition is a condition that is a necessary, but insufficient, component in a causal path that is by itself only sufficient to reach the outcome of interest (Wagemann and Schneider, 2010b). A *SUIN* condition is a condition that is sufficient but not-necessary part of a causal combination that is insufficient but necessary for the result (Schneider and Wagemann, 2012).

On this basis, one could correctly argue that we still don't know the relative importance of each (necessary or sufficient) condition in explaining the outcome (Goldthorpe, 1997). This is possible thanks to the distinction between 'causally core' and 'causally peripheral' conditions (Fiss, 2011). As

¹¹¹ Braumoeller and Goertz (2000) propose an alternative definition stating that a cause is necessary if the outcome does not occur in the absence of the condition. Due to the fact that these definitions are equivalent, the way to test the necessity of a cause essentially depends on the relative ease and cost-effectiveness of finding empirical evidence (Braumoeller and Goertz, 2000: 846).

the names suggest, core conditions are those that display a strong causal relation with the outcome of interest, while peripheral ones present a weaker connection. From a technical point of view, core conditions are part of the parsimonious and intermediate solutions generated by fsQCA software package, while peripheral conditions appear in the intermediate solution only. In 2008 a graphical representation of core and peripheral causal conditions was introduced¹¹². In particular, core conditions are represented by larger circles, while peripheral ones are represented by smaller circles (Ragin and Fiss, 2008). Moreover, 'black circles' indicate the presence of a sufficient (or necessary) causal condition, 'crossed-out white circles' indicate its absence and 'blank spaces' indicate situations in which a condition is either present or absent. On this basis, Fiss (2011) convincingly argument that core conditions are surrounded by 'neutral permutations' of peripheral conditions that do not influence the overall outcome.

We conclude our discussion by highlighting that the analysis of necessary and sufficiency have to be kept separate. Indeed, in CCMs the use of the Truth Table Algorithm to analyze sufficiency is predominant, while the analysis of necessity is less time-consuming and intellectually challenging as it is automatically performed by the software. However, this latter analysis has to be carefully taken into account to avoid the presence of hidden or false necessary conditions in the solution terms (Schneider and Wagemann, 2012). A necessary condition is 'hidden' if it is not visible in all sufficient paths leading to the outcome due to the use of incoherent counterfactuals and/or the inclusion of inconsistent truth table rows. By contrast, a necessary condition is 'false' when it appears in all sufficient paths without being really necessary to reach the outcome. In order to avoid such problems, the analysis of necessity has to be performed before the sufficiency test (Ragin, 2006).

6.3.2 Set-theoretic consistency

Set-theoretic consistency measures the "degree to which the evidence is consistent with the argument that a set relation exists" (Ragin, 2006: 293). This general idea is applied both to the analysis of necessity and sufficiency, with slightly different formulas for csQCA and fsQCA.

In order to assess *consistency of sufficient conditions* in csQCA the following formula is used:

$$(\text{number of cases where } X=1 \text{ and } Y=1) / (\text{number of cases where } X=1)$$

In verbal language, this means that consistency is measured by dividing the number of cases in which the outcome and the causal condition are simultaneously present by those cases displaying

¹¹² It is important to note that the graphical representation is not automatically generated by any software. It up to the researcher to compare the intermediate and the most parsimonious solution to identify core and peripheral conditions.

only the causal condition. By contrast, measuring consistency in fsQCA requires a more elaborated formula¹¹³ (Ragin, 2006; Ragin et al., 2008):

$$\text{SUM min (X,Y) / SUM (X)}$$

This means that "for each case, the minimum values across the membership scores in X and Y are added up and then divided by the sum of the membership values in X across all cases" (Schneider and Wagemann, 2012: 126). This formula allows to take into account consistent and non-consistent cases. In the former case, the units of analysis will obtain the same membership score of the causal condition, while in the latter the minimum value between the membership score of the outcome and the causal condition will be attributed. This formula is constructed in such way that the greater is the mismatch between the membership of causal condition and the outcome (i.e. the greater is the inconsistency between the outcome and the causal condition), the lower will be the contribution of the unit of analysis to the overall consistency measure. In both csQCA and fsQCA, consistency scores closer to 1 support the idea that the causal condition is sufficient to reach the outcome. As a rule of thumbs, consistency scores above 0.75 are considered good indicators on the existence of set relationships. However, these rule-of-thumbs could be modified considering the theoretical expectations and the quality of the data (Schneider and Wagemann, 2012).

By contrast, *consistency of necessary conditions* in csQCA is measured by applying the following formula:

$$(\text{number of cases where X=1 and Y=1}) / (\text{number of cases where Y=1})$$

In verbal language, consistency is measured by dividing the number of cases in which the outcome and the causal condition are simultaneously present by those cases displaying only the outcome. This formula allows to assess the proportion of cases in which the membership value in the outcome is smaller than the respective value in the causal condition. In fsQCA, consistency is measured in a slightly different way:

$$\text{SUM min (X,Y) / SUM (Y)}$$

This formula relates "each case's membership in X that is consistent with the statement of necessity to the sum of each case's membership in Y" (Schneider and Wagemann, 2012). This formula takes into account how many cases deviate from the path of necessity and how this deviation is strong. In order to identify meaningful necessary relations, a minimum consistency value of 0.90 has been

¹¹³ In order to avoid confusion, we want to highlight that in Ragin (2000) a slightly different measure was presented. This measure simply calculates the raw proportion of cases above the diagonal (i.e. those units of analysis that have a membership score in the causal condition less or equal to the membership score in the outcome). This measure was the ancestor of the 'more elaborated formula' we'll describe in the main body of the text. Similarly, in Ragin (2000) necessity was calculated as the raw proportion of cases below the diagonal (i.e. those units of analysis that have a membership score in the causal condition superior or equal to the membership score in the outcome). These two raw measures have a substantial problem: they do not distinguish between strong and weak membership in a causal condition (Ragin, 2006).

suggested (Ragin, 2006). High consistency values allow to reduce the chances to find hidden and false necessary conditions in the solution formula (Schneider and Wagemann, 2012).

6.3.3 Set-theoretic coverage

Set-theoretic coverage measures the "degree to which a cause or a causal combination accounts for instance of an outcome" (Ragin, 2006: 293). Simply speaking, coverage measures to what extent the causal condition is empirically important in explaining the outcome of interest. Due to the fact that measuring coverage requires that a causal condition is a subset of the outcome of interest, it is important to bear in mind that the degree of coverage could be assessed only for consistent set-relations. Similarly to consistency, coverage is calculated for both sufficiency and necessary conditions.

In order to assess the *coverage of sufficient conditions* (i.e. the degree to which the sets of the causal conditions and the outcome overlap) in csQCA the following formula is used:

$$(\text{number of cases where } X=1 \text{ and } Y=1) / (\text{number of cases where } Y=1)$$

This formula is mathematically identical to that used to measure consistency of necessary conditions¹¹⁴. In fsQCA the 'overlap' is calculated using the following formula:

$$\text{SUM min } (X,Y) / \text{SUM } (Y)$$

According to this formula, "the more the cases that are located in the upper left corner [*of the XY plot*] and the farther away from the main diagonal these cases are, the lower the coverage. Those cases are good empirical instances of the outcome (high membership in Y) for which we lack, however, an adequate explanation because they are weak empirical instances of the sufficient condition (low membership in X)" (Schneider and Wagemann, 2012: 132). Following the idea that coverage for sufficient conditions express how much of the outcome is covered by causal conditions, there is no need to identify a minimum acceptability threshold. Due to the fact that coverage measures the empirical relevance of the causal paths, three coverage measures have been developed if the solution formula reveals more than one equifinal configurations. These measures could be summarized as follows: "*solution coverage* (indicating how much is covered by the solution term); *raw coverage* (indicating which share of the outcome is explained by a certain alternative path); *and unique coverage* (indicating which share of the outcome is *exclusively* explained by a certain alternative path)" (Wagemann and Schneider, 2010b: 7). These measures are roughly equivalent to the partition of the explained variation in linear regressions (Ragin, 2006). Fiss (2007) provides an useful example to clarify this point while stating that "just as a factor may

¹¹⁴ As previously discussed, consistency of sufficient conditions in csQCA is measured dividing the number of cases displaying the outcome and the causal condition by the overall number of units of analysis contained in the set of *the causal condition*.

be statistically significant but its explained R2 may be very small, a characteristic or combination of characteristics may be sufficient to lead to the outcome, but its unique coverage may be very low since only few cases exhibit this path to the outcome" (p. 1189). Several scholars consider this simplification more misleading than useful especially for less skilled users of CCMs who may be tempted to assign to raw and unique coverage a statistical meaning (Wagemann and Schneider, 2010b).

The mathematical formulas used to assess the degree of *coverage of necessary conditions* in csQCA and fsQCA are equal to those previously used to measure the consistency of sufficient conditions. However, their substantive meaning is profoundly different as they have to be interpreted in terms of relevance (or trivialness) (Goertz, 2006; Ragin, 2008c). The more a causal factor virtually happens any time in the universe of analysis, the more it is considered as 'trivially' necessary¹¹⁵. In this sense, it is possible to evaluate trivialness only for those conditions that have proven to be consistently necessary (i.e. they have a consistency value greater than 0.90). The more a coverage value of a necessary condition is closer to zero, the more the condition is trivial in the analysis.

Despite the logical and mathematical connections among consistency and coverage, high levels of consistency does not automatically lead to high levels of coverage as "complex set-theoretic arguments involving the intersection of many sets can achieve remarkable consistency but low coverage" (Ragin, 2006: 299). In more simple terms, if we use a great number of logical AND to identify an highly consistent set, it is not surprising that this set is not so empirically important in explaining the outcome of interest. We admit that the debate on the existing relations among these measures is still on-going. For instance, it has been suggested that the direction and the magnitude of the coverage in fsQCA is influenced by the interaction between membership scores and crossover threshold (Thiem, 2013b). Similarly, alternative formulas used to assess the coverage of necessary conditions have been suggested to capture another source of trivialness, namely the fact that size of the causal condition and the outcome set are close to being constants (Schneider and Wagemann, 2012).

6.3.4 Contradictory configurations

A contradictory configuration emerges when researchers analyze its truth table. A truth table "contains the empirical evidence gathered by the researcher by sorting cases into one of the 2^k logically possible combinations, aka truth table rows, of K conditions" (Schneider and Wagemann,

¹¹⁵ Trivialness applies also to sufficient conditions. A trivial sufficient condition refers to a causal condition that (virtually) never happens. In other words, a trivially sufficient condition lacks of importance due to its extreme difficulty in being reached. In the XY plot, trivial sufficient conditions group on the left side as the values of set membership in the causal condition is closer to full non-membership.

2012: 334). A truth table row is contradictory if it simultaneously contains cases leading to the presence and to the absence of the outcome of interest. In other words, a logical contradiction emerges when the units of analysis share the same causal conditions (i.e. they are part of the same row), but they display different outcomes. Therefore, it is impossible to decide whether a given combination is sufficient either for the presence or the absence of the outcome. Two strategies have been suggested to deal with contradictory configurations: removing contradictions and treating contradictions (Rihoux and De Meur, 2008; Rihoux and Ragin, 2008). The former strategy implies to add new causal conditions capable to better differentiate the cases¹¹⁶, to drop contradictory cases from the analysis or to re-specify the outcome of interest and the conditions. By contrast, the latter strategy implies to "force" the attribution of the outcome to a contradictory row, i.e. to consider the row as sufficient to reach the outcome (or its negation) regardless the empirical evidence at hand. This choice is possible by using the frequency and consistency scores presented by the software.

6.3.5 Limited diversity

While contradictory configurations refer to situations in which empirical evidence is present (even though contradictory), limited diversity arises when any case is included in a given truth table row. Simply speaking, we lack of empirical evidence suggesting that the row is sufficient (or not) to reach the outcome. This lack of evidence arises from the fact that there is a mismatch between all logically possible combinations of causal conditions and real world observations. In Boolean algebra, we could easily calculate the number of all logically possible combinations of conditions using the formula 2^k , where k is the number of dichotomized causal conditions¹¹⁷. Due to this exponential function, the resulting number of logically possible combinations is quite high even for relatively lower number of causal conditions. As a consequence, it is very unlikely that all these possible configurations will be empirically observed, even with a great number of units of analysis. These are the so-called 'arithmetic reminders' as only few rows in the truth table contain empirically observed cases, while the great majority of rows are empty (Ragin, 1999). On this basis, one could argue that limited diversity emerges only when the number of cases is limited and the number of conditions is high. However, two other sources for limited diversity have been detected: clustered reminders and impossible reminders (Schneider and Wagemann, 2012). The former type of reminders arises from the fact that social and cultural processes constrains the existence of some

¹¹⁶ By adding new causal conditions, we generate more fine-grained combinations of attributes capable to better capture the qualitative differences existing among cases.

¹¹⁷ For instance, let's imagine to choose 7 theoretically relevant causal conditions. These conditions generate a total of 128 logically possible configurations. In small and intermediate-N research designs, limited diversity clearly emerges as we do not have enough cases to cover all these possible combinations.

causal combinations. By contrast, the latter type emerges as hypothetical logical combinations cannot simply exist in real world.

Due to the fact that limited diversity is the rule rather than the exception while analyzing a social phenomena (Ragin and Sonnett, 2004), one could argue *why* limited diversity is so important. We want to point out that the problem relies on *how* researchers deals with limited diversity rather than on its presence/absence. In order to deal with non-observed cases, traditional statistical techniques essentially rely on computer-based assumptions on which the researcher has essentially no control (Schneider and Wagemann, 2006). By contrast, CCMs force researchers to make explicit decisions on 'counterfactuals' (or 'logical reminders'), i.e. the logically possible configurations not empirically observed. The treatment of logical reminders is made possible by the use of the so-called Standard Analysis (SA) (Ragin and Sonnett, 2004), i.e. a procedure that allows to include counterfactuals in the analysis of sufficiency. The SA allows to identify three type of solutions that are in set relationship with each another (Schneider and Wagemann, 2012):

- (1) *most parsimonious solution*, a solution that contains all simplifying assumptions capable to describe in the most parsimonious way the available empirical information. This solution assumes that all reminders are sufficient to reach the outcome, no matter if they are contrary to the theoretical expectations. Due to its extreme parsimony, this solution can also be represented as a superset containing all other less parsimonious solutions;
- (2) *conservative solution*, a solution that does not include any assumption on logical reminders. Due to the fact that empirically observed cases are simply described, this solution is a subset of all those solutions including at least one logical reminder;
- (3) *intermediate solution*, a solution in which only easy counterfactuals are applied. Therefore, the intermediate solution is a one of the subsets of the most parsimonious solution and one of the supersets of the conservative one.

Each of these solutions is logically correct as it does not contradict the empirical evidence contained in the truth table rows and the assumptions on counterfactuals made by the researcher. However, we need to take into account two major issues while analyzing the three solutions produced by the SA. First, these solutions represent the subset/superset relations existing among causal paths including more or less counterfactuals. This representation of set-relations does not take into account the number of conditions and logical operators included in a given solution¹¹⁸ (i.e. solution complexity). This conceptual distinction is important as "in applied QCA, the extreme ends of the dimensions of set relations and complexity more often than not tend to refer to different solution

¹¹⁸ In other words, a solution is more complex than another if it uses more conditions and/or logical operators.

formulas - the subset formula is usually not the most complex, and the superset formula not the most parsimonious one"(Schneider and Wagemann, 2012: 166). If the most parsimonious solution is not the real superset, the SA could reject some intermediate solutions and/or produce solutions based on either implausible¹¹⁹ or incoherent¹²⁰ assumptions (i.e. untenable assumptions) (Schneider and Wagemann, 2012).

Second, the SA uses the simplifying assumptions provided by the researcher to generate the intermediate solutions. Configurational scholars usually refer to simplifying assumptions with the label '*don't care combination*'. We admit that this label, at a first glance, is a bit misleading as it could lead to believe that these causal combinations are not relevant for analyzing causal complexity¹²¹. Actually, a simplifying assumption implies that researchers use their empirical and theoretical knowledge to assess the plausibility of empirically non-observed combinations and to assign them the expected outcome (Ragin and Sonnett, 2004; Rihoux, 2006; Soda and Furnari, 2012). In doing so, Ragin and Sonnett (2004) suggest to distinguish between:

- easy counterfactuals: non-observed cases whose existence is sustained from an empirical or theoretical point of view. This knowledge allows the researcher to determine a *directional expectation* on how the causal condition could contribute to the outcome (Schneider and Wagemann, 2012);
- difficult counterfactuals: non-observed cases whose existence is based only on empirical evidence. Therefore, it is impossible to define any directional expectations on their contribution to the outcome.

Due to the fact the most parsimonious solution is derived by including all simplifying assumptions (i.e. easy and difficult counterfactuals), intermediate solution contains easy counterfactuals only. In this sense, directional expectations are useful to retain in the intermediate solution only those conditions that find support in theoretical and empirical knowledge.

Based on the previously described issues, Schneider and Wagemann (2012) created two revised versions of the SA: the 'Enhanced Standard Analysis' (ESA) and the 'Theory-guided Enhanced Standard Analysis' (TESA). In order to avoid the inclusion of untenable assumptions in the intermediate solution terms, the ESA restricts the use of counterfactuals to those logical reminders that are supported by theoretical and substantive knowledge, no matter if they contribute to

¹¹⁹ Implausibility emerges when impossible reminders are used in the assessment of sufficiency.

¹²⁰ A counterfactual is incoherent when: (a) the same logical reminder is considered sufficient for both the presence and the absence of the outcome; (b) a logical reminder contradicts a claim of necessity. In particular, "if a researcher claims that X is necessary for Y, than any logical reminder row that implies condition NOT X cannot be used for a counterfactual claim following which it would produce outcome Y"(Schneider and Wagemann, 2012: 199).

¹²¹ The 'don't care' label is an engineering term used in truth table approach in the design and analysis of switching circuits used to develop csQCA software (Ragin and Sonnett, 2004).

parsimony or not (i.e. good counterfactuals)¹²². While in SA only easy counterfactuals are included in the analysis, in ESA easy counterfactuals are combined with other coherent and tenable assumptions that are neither 'good' nor simplifying. As a result, no contradictory simplifying assumptions are included in the analysis and necessary conditions do not disappear from the intermediate solution term. In contrast to ESA that still includes some elements of parsimony, TESA is centered exclusively on theoretical plausibility by including 'good but non-easy' counterfactuals into logical minimization. On this basis, one could argue when to apply SA, ESA and TESA. As a general rule, ESA and TESA should be applied when the number of causal conditions is very high (Schneider and Wagemann, 2012). Despite this fact, the SA is still the dominant method to deal with logical reminders.

6.4 An overview on configurational comparative techniques

We'll now turn to analyze the three main analytical techniques used in configurational comparative analysis: crisp set QCA, fuzzy sets QCA and multi value QCA. Admittedly, Rihoux (2006) also identifies a fourth technique labeled as 'most similar, different outcome' (MSDO) and 'most different, similar outcome' (MDSO). Thanks to the use of a distance matrix and a similarity graph used to group the most similar (or dissimilar) units of analysis, this technique could be used in the early stages of CCMs to reduce observed complexity (De Meur et al., 2006). In particular MSDO is applicable to very small-N research designs (i.e. three or four cases), while MDSO can cover a relatively higher number of cases (i.e. from fifteen to twenty-five) (Berg-Schlosser and De Meur, 2008). Due to the fact that we consider MDSO and MSDO as supporting techniques rather than established configurational methods, we do not analyze them in our discussion. Moreover, we'll not discuss temporal QCA (tQCA), a variant of CCMs aiming at formally incorporating the temporal ordering of conditions as causally relevant information (Caren and Panofsky, 2005; Ragin and Strand, 2008). This technique shares the great majority of its features with csQCA and fsQCA (e.g. it operates on sets, it uses truth tables, it identifies necessary and sufficient conditions, it can be applied to fuzzy set data). Therefore, tQCA could be interpreted as a simple variant of csQCA in which causal conditions are arranged to take into account temporal effects (Schneider and Wagemann, 2012).

¹²² In other words, a good counterfactual could either be an easy counterfactual (as defined in the Standard Analysis) or not.

6.4.1 Crisp set qualitative comparative analysis (csQCA)

CsQCA is the first technique developed by Ragin to perform configurational comparative analysis (Ragin, 1987). As the name suggest, this technique follows the idea that the concepts underlying the causal conditions and the outcome of interest can be transformed into set. Empirically observed cases can be synthetically described by assigning either full membership (i.e. the outcome/causal condition is present) or full non-membership (i.e. the outcome/causal condition is absent) in those sets representing theoretically relevant concepts¹²³. This binary structure used to summarized data allows to perform Boolean minimization to identify the regularities among cases capable to explain the outcome of interest.

It is up to the researcher to calibrate the outcome and the causal conditions, i.e. to define meaningful cut-off points (also labeled as 'thresholds') according to which each empirically observed case can be considered in or out of a given set. The identification of meaningful thresholds has to be based on theoretical and empirical knowledge (Rihoux and Lobe, 2008; Rihoux and Ragin, 2008). This idea could be better understood with the following short example:

"For instance: in the study of community conflicts in Europe, Rihoux et al. (2008) decide that a community conflict dimension (e.g. religious, territorial, demographic) is coded as 'salient' (score of [1] on that condition) only if this dimension is highly salient in the policy discourse and in the actual political initiatives. This operationalization was drawn from historical, 'thick' case knowledge, observing the processes of conflict escalation and de-escalation in the specific cases" (Rihoux and Lobe, 2008: 233)

Despite this example has been taken from political science, the central role of the researcher in identifying the cut-off points clearly emerges. Several 'good practices' have been identified to help dichotomization. For instance, it has been suggested to avoid (if possible) sample-based thresholds and to transparently discuss the criteria used while calibrating in order to allow research reproducibility (Rihoux, 2006; Schneider and Wagemann, 2010; Wagemann and Schneider, 2010b). It is important to note that the possibility to manipulate the results by deciding the position of the thresholds is only apparent. Schneider and Wagemann (2012) claim that, for each concept, there is only a certain range in which the threshold could be plausibly collocated by the researcher. Moreover, robustness tests have proven that result validity is poorly effected by minor changes while using plausible thresholds.

In order to perform logical minimization, csQCA uses a so-called 'truth table', a table listing all logical possible combinations of causal conditions and containing the cases conforming to each combination (Ragin, 1987). In its essence, a truth table is a representation of the property space in which the cases are classified according to their causally relevant features. Therefore, the

¹²³ We want to highlight that set membership is conceptually distinct from the concept of 'configuration'. While the former concept refers to a difference in kind within each causal condition or outcome (i.e. their presence/absence), the latter concept essentially represents a difference in kind among group of cases.

fundamental unit of analysis in csQCA is the truth table row, i.e. a group of cases conforming to a configuration that is qualitatively different from the other configurations forming the property space (Ragin, 1987; Ragin, 1999). In order to identify sufficient conditions csQCA performs a process of logical minimization of truth table rows using Quine-McCluskey algorithm¹²⁴, i.e. "a process by which the empirical information is expressed in a more parsimonious yet logically equivalent manner by looking for commonalities and differences among cases that share the some outcome" (Schneider and Wagemann, 2012: 9). The algorithm operates in the following steps:

1. the algorithm first identifies the truth table rows in which the outcome is present (i.e. 'primitive expressions'). Then, it compares pairs of rows differing in only one causal condition in order to simplify (i.e. to drop from the analysis) those causal conditions that are logically redundant in explaining the outcome of interest (Ragin, 1999; Ragin, 2000). This process of comparison stops when no further simplification is possible. The intermediate outcome of the procedure is a list of minimized configurations (i.e. 'prime implicants') describing the primitive expressions sufficient to reach the outcome;
2. due to the fact that the same primitive expression (i.e. a sufficient truth table row) could be simultaneously covered by different prime implicants, in the second step logically redundant prime implicants¹²⁵ are further minimized in order to obtain a more parsimonious solution. In doing so it is possible to use the 'prime implicants chart', a visual tool in which the minimum number of prime implicants capable to fully cover the original rows of the truth table can be identified.

While an in depth analysis of the algorithms used is beyond the scope of our research, we want to highlight two technical features that could influence the subsequent interpretation of the results. First, the minimization process used in csQCA always produces sufficient conditions (Wagemann and Schneider, 2010b). This feature is summed up by Wagemann and Schneider (2010) while stating:

"any truth table row which shows the outcome is already a (raw) sufficient condition for the outcome. Therefore, the analysis of sufficient conditions *always* leads to a result, if at least one truth table row is connected to the outcome to be explained" (Wagemann and Schneider, 2010b: 14)

Second, the Quine-McCluskey minimization algorithm only allows to identify sufficient conditions (Wagemann and Schneider, 2010b). In order to assess the presence of necessary conditions, a

¹²⁴ We want to highlight that contradictory configurations have to be solved before performing minimization as Quine-McCluskey algorithm works only with well-defined outcomes. See below for a in deep discussion on contradictory configurations.

¹²⁵ A prime implicant is logically redundant if "all of the primitive expressions are covered without it being included in the solution formula. Hence, a solution formula without such a prime implicant does not violate the truth value of the information contained in the truth table" (Schneider and Wagemann, 2012: 110)

different algorithm verifies if the membership score of the outcome is systematically equal or lower to the membership score of the causal condition. The sufficiency test allows to simultaneously identify necessary conditions only when the truth table has no logical reminders (i.e. all logically possible combinations of causal conditions are empirically observed) and it does not contain any contradictory rows. If these two conditions are not met, the analysis for necessity and sufficiency have to be taken separate.

6.4.2 Fuzzy set qualitative comparative analysis (fsQCA)

While in csQCA the outcome and the causal conditions have to be expressed in terms of membership or non membership, not all social science concepts could be correctly interpreted in terms of dichotomies (Fiss, 2007). This not clear cut distinction arises from the absence of sharp conceptual boundaries rather than from an inability to empirically measure these concepts (Schneider and Wagemann, 2012). In other words, empirically observed cases can be qualitatively different (i.e. they display differences in kind) and quantitatively different (i.e. qualitatively identical cases can present diverse degrees of empirical manifestation of the same concept). In order to cope with this complexity, in 2000 Ragin developed a new configurational technique labeled as fuzzy sets qualitative comparative analysis (fsQCA) (Ragin, 2000). It is important to note that csQCA and fsQCA share huge similarities in methodological principles, technical rules and underlying functioning principles. For instance, both of them try to identify qualitative differences among cases, use the same minimization algorithm to identify sufficient conditions and apply the same top-down procedure to identify necessary conditions. Therefore, in this section we'll discuss the peculiarities of fsQCA in comparison to csQCA.

Similarly to csQCA, fsQCA has a value of zero indicating non-membership and a value of one indicating full membership. However, in fsQCA a set could be divided even further using theoretical and empirical knowledge capable to identify critical membership points (i.e. the thresholds)¹²⁶. For instance, "levels can be 0, 0.33, 0.66, and 1, where 0 represents non-membership, 1 represents complete membership, and 0.33 and 0.66 represent intermediate levels; a value of 0.33 implies that a case is more out of, rather than in, the set, and a value of 0.66 implies that the case is more in, rather than out of, the set" (Crilly et al., 2012: 1433). This partition is not the rule as researchers are free to define the number of thresholds that better represent the phenomenon of interest¹²⁷ (Fiss, 2007). As a result, we could have fuzzy sets formed by three values (i.e. fully in,

¹²⁶ It is also possible to justify the thresholds using the statistical distribution of the cases in the sample (e.g. sample median or average).

¹²⁷ This freedom in defining the number of thresholds has to be carefully interpreted as "with increasing levels of differentiation it becomes ever more difficult to come up with theory-based and empirically observed distinctions

neither fully in nor fully out, fully out), four values (i.e. fully in, more in than out, more out than in, fully out), six values (i.e. fully in, mostly but not fully in, more or less in, more or less out, mostly but not fully out, fully out) and even 'continuous' fuzzy sets. All these partitions simultaneously provide both qualitative (i.e. membership/non membership in the set) and quantitative information (i.e. degree to membership) on the units of analysis included in the set¹²⁸. As a result, "fuzzy sets offer researchers an interpretative algebra, a language that is half verbal-conceptual and half mathematical-analytical. Thus, the greatest value of fuzzy set for social scientist is their potential to enlivening, intensifying and extending the dialogue between ideas and evidence in social research" (Ragin, 2000: 4). It is important to note that, in contrast to csQCA, in fsQCA cases with partial membership in a given fuzzy set (i.e. those units of analysis that have fs-values different from 0 and 1) have also partial membership in the opposite fuzzy set. For instance, a firm with a partial membership score of 0.7 in the set of 'small firms' has a simultaneous score of 0.3 in the opposite set of 'not-small firms'.

Choosing the number of thresholds is not sufficient to perform fsQCA as we also need to calibrate them (Ragin, 2000; Ragin, 2008a). In other words, we need to identify external criteria capable to guide the transformation of interval-scale (or ratio-scale) indicators into fuzzy sets membership scores. Ragin provides a clear example on the type of external criteria usable while stating:

"set membership scores may reflect standards based on social knowledge (e.g., the fact that twelve years of education constitutes an important educational threshold), collective social scientific knowledge (e.g., about variation in economic development and what it takes to be considered fully in the set of "developed" countries), or the researcher's own accumulated knowledge, derived from the study of specific cases" (Ragin, 2008a: 9-10)

Calibration allows to adjust the measures used to evaluate a social phenomena taking into account the contextual conditions. For instance, let's image a firm with 9 employees operating in Italy. In our example the number of employees is an un-calibrated measure of its dimension and, in order to calibrate it in the set "small firms", we can use the definitions provided by the European Union to classify firms according to their size. According to this external criteria, our firm has a low degree of membership in the set (e.g. 0.33). For the sake of the argumentation, let's now image that the firm operates in a region where the average dimension of a firms is 5. Based on this empirical knowledge, a researcher could better calibrate set membership for the firm with 9 employees by assign an higher membership score (e.g. 0.66). As we have demonstrated, external criteria and substantive knowledge can be used to perform a so-called 'theory based' or 'qualitative calibration'

between the values [...]. One should therefore not over-interpret the substantive meaning of marginal differences in set-membership scores, such as the difference 0.62 and 0.63. Such small differences also have a negligible impact on the analytic results" (Schneider and Wagemann, 2012: 29)

¹²⁸ In this sense, csQCA is considered a special case of fsQCA, i.e. it is a fuzzy analysis in which only full membership and full non-membership are allowed.

in which the researcher manually assign membership scores to the units of analysis. By contrast, a semi automatic procedure could be used in the case of interval scale or continuous data. In such case, external criteria are again used to define the qualitative anchors, but membership scores are assigned to cases using two different techniques (Ragin, 2008a):

- (1) *Direct method.* In order to rescale an interval variable, a researcher use external criteria to define the values for full membership, full non-membership¹²⁹ and the point of maximum ambiguity among them (i.e. the value 0.5). On this basis, it is possible to calculate the deviation from the cross-over point for each unit of analysis (so-called 'deviation score'). These deviation scores are then translated into the metric of log odds utilizing the external criteria embedded into the three qualitative anchors. In the next step, these values are subjected to a mathematical procedure capable to automatically assign the degree of membership¹³⁰;
- (2) *Indirect method.* This method relies on grouping cases into different levels of membership (i.e. preliminary membership scores). Grouping should be based on substantive knowledge as "the strongest the empirical basis for making qualitative assessment of set membership, the more precise the calibration of the values of interval-scale indicator as set membership score" (Ragin, 2008a: 17). Using a fractional logit statistical model, it is possible to estimate the final membership scores. Clearly, the initial coding scheme will determine the final number of qualitative categories resulting from the analysis. Due to the fact that the indirect method of calibration is not yet implemented in QCA software packages, the procedure has to be applied using other statistical programs.

We want to highlight that the use of logistic transformation or fractional logit model essentially depends on an arbitrary decision of Ragin in developing these semi-automatic procedures to transform interval data into fuzzy-set values. In other words, the use of other functional forms in calibration procedures is equally admissible. However, it has been demonstrated that these alternative functional forms have a limited impact on set-membership scores if the cross-over point remains the same (i.e. its location is determined using strong theoretical and empirical knowledge) (Thiem, 2010). The use of different functional forms in calibration can produce diverse values of set membership when "set membership is highly skewed, i.e. when most cases are located either above or below the 0.5 qualitative anchor" (Schneider and Wagemann, 2012: 38).

¹²⁹ Due to the fact that a logistic transformation is used in the software, in applied QCA the anchor points for full membership and full non-membership are respectively 0.95 and 0.05.

¹³⁰ This mathematic procedures is automated in QCA software packages. Therefore, we suggest to the interest reader to refer to Ragin (2008a) for technical details.

After this discussion, it is quite obvious to say that the procedure used to calibrate is one of the key differences between csQCA and fsQCA. Another major difference emerges in the use of truth tables to identify sufficient and necessary conditions (Ragin, 2008b). In csQCA truth tables are used to sort cases according to their specific combination of causal conditions. By cross-tabulating the presence/absence of the outcome against the presence/absence of a causal combination, it is possible to verify that the causal condition is a subset (i.e. sufficiency) or a superset of the outcome (i.e. necessity). This procedure cannot be replicated in fsQCA as each unit of analysis has a different membership score in causal conditions. It has been claimed that the use of XY plot in fsQCA is the conceptual equivalent to the cross-tabulation in csQCA (Schneider and Wagemann, 2012). Simply speaking, a XY plot displays the fuzzy-set values for the causal condition and the outcome respectively in the X-axis and in the Y-axis. As a result, in fsQCA sufficient conditions are assessed verifying if the membership score for the condition is consistently equal (or less) to its score in the outcome. Put differently, the causal condition is a subset of the outcome if all cases (or almost all cases) fall above the main diagonal. By contrast, a condition is necessary if the cases have a membership score for the outcome systematically higher than the score for the causal conditions. From a graphical point of view, this means that the units of analysis group below the main diagonal in the XY plot. This procedure to identify sufficient and necessary conditions in fsQCA is possible for three technical reasons (Ragin, 2008b). First, the truth table rows directly correspond to the vector space corners defined by the combinations of causal conditions. Put differently, each corner represents an ideal-type situation as it is formed by a specific combination of extreme membership scores in causal conditions. Second, each case can have only one membership score greater than 0.5 in all the logically possible truth table rows. This value is used to assign the case to the truth table row it belongs to. The greater this value of membership is, the closer the case resembles to the ideal type represented in the truth table row. On this basis, a researcher could identify a minimum number of cases that each ideal-type has to contain in order to be considered a non-logical reminder row¹³¹. Third, a consistency test is used to verify if the empirical evidence supports the existence of meaningful subset relations. If a truth table row displays a relatively lower consistency value, it can be treated as a contradictory configuration. The same strategies previously used to resolve contradictions in csQCA could also be applied in fsQCA. Fuzzy sets technique is usually applied in intermediate-N and large-N research situations (Rihoux, 2006). Clearly, there is a natural trade off between the intimacy gained with each case (i.e. depth)

¹³¹ This minimum number of cases should be identified on "the total number of cases included in the study, the number of conditions, the degree of familiarity of the researcher with each case, the degree of precision that is possible in the calibration of fuzzy sets, the extent of measurement and assignment error, whether the researcher is interested in a coarse versus fine-grained pattern in the results" (Ragin, 2008b: 107).

and the number of case considered (i.e. breadth). Rihoux and Lobe (2008) argue that the more a research design moves from small-N to intermediate-N, the lower is the knowledge that a researcher could reasonably acquire on a case. As a consequence, the intimacy with the cases has recently being toned down for fsQCA as this techniques is increasingly considered a valuable alternative to linear algebra statistical techniques (Cooper, 2005; Fiss et al., 2013a; Greckhamer et al., 2013; Rihoux, 2006; Vis, 2012). The (still) hidden potentialities of fsQCA are well synthesized in the following claim:

"When Ragin reminds us that a matrix of symmetrical correlations is ultimately what's "under the hood" in everything from OLS to factor analysis to structural equation modeling, it does make one wonder how many interesting asymmetrical relationships are missed in even the most rigorous quantitative analyses" (Vaisey, 2009: 309)

These considerations have lead some scholars to suggest that, in fact, configurational methods for small-N research design are distinct from those for large-N as they rely on different assumptions, objectives and analytical processes (Greckhamer et al., 2013).

6.4.3 Multi-value qualitative comparative analysis (mvQCA)

Multi-value qualitative comparative analysis (mvQCA) is a direct extension of csQCA as it is based on the idea that certain social science phenomena are better understood in terms of multinomial concepts (Cronqvist and Berg-Schlosser, 2006). Similarly to csQCA, the purpose of mvQCA is to simultaneously find the alternative causal paths leading to an outcome. However, mvQCA does not force dichotomization for non-dichotomous causal conditions. Simply speaking, multiple thresholds could be used to split the units of analysis in more homogeneous set categories (Vink and Van Vliet, 2009). In practical terms if a researcher uses two thresholds, than the causal condition could have three qualitatively different states (i.e. different categories) identified by the numbers 0,1 and 2¹³². In mvQCA the value "0" and the value "1" do not respectively mean full non-membership and full membership as we have previously discussed for csQCA and fsQCA (Vink and Van Vliet, 2013). By contrast, the "category 0" and the "category 1" in mvQCA are qualitatively different subsets of an higher-level set represented by the causal condition.

MvQCA is more suitable to be applied in intermediate-N situations, i.e. when the number of the units of analysis is between 40 and 50¹³³ (Rihoux, 2006). It has been correctly argued that in such

¹³² We want to highlight that a 'qualitatively different state' does not mean 'qualitative superior to other different states'. Let's think to a causal condition referring to religions labeled as follows: 0 for "Christian", 1 for "Muslim" and 2 for "Buddhist". On this basis, it's hardly to assert that being a Buddhist is somehow superior to be a Muslim or a Christian. Being a Buddhist is simply qualitatively different from being a member of other religions.

¹³³ We want to clarify that these number of cases have to be considered as 'rule of thumbs'. For instance, in a research with 40 or 50 units of analysis both csQCA and mvQCA could be applied. It's up to the researcher to choose between

research settings the probability to find deviant cases that lead to contradictions using dichotomization is substantially high (Herrmann and Cronqvist, 2006). As a consequence, the possibility to use more than one threshold to categorize data avoids the loss of relevant information embedded in the use of only one threshold (Herrmann and Cronqvist, 2009).

On this basis, one could imagine that mvQCA is a well established configurational method. Several reasons make us think that is not true. First, there is an on-going methodological debate on the set-theoretic nature of mvQCA. Some scholars contend that multi-value variables are not sets and do not allow to identify necessary and sufficient conditions (Schneider and Wagemann, 2012). Second, mvQCA has only recently been implemented in a software package named *Tool for Small-N Analysis* (TOSMANA)(Cronqvist, 2007). By contrast, csQCA and fsQCA have been implemented in other software packages based on a different minimization algorithm (Ragin et al., 2006; Ragin et al., 2008). While the minimization rule and the use of truth tables are essentially the same for mvQCA, csQCA and fsQCA (Cronqvist and Berg-Schlosser, 2008), some basic functionalities are still missing in TOSMANA making it less appealing for use (Cronqvist, 2011; Thiem, 2013a). As a consequence, the number of contributions applying mvQCA is still relatively limited (Thiem and Duşa, 2013; Vink and Van Vliet, 2009). Third, the value added of mvQCA is still unclear as it is a sort of 'middle earth' between csQCA and fsQCA (Thiem, 2013a; Vink and Van Vliet, 2009; Vink and Van Vliet, 2013). In essence mvQCA allows to use multiple thresholds for causal conditions (i.e. discrete membership score), while the outcome of interest has always to be dichotomous (Vink and Van Vliet, 2009; Wagemann and Schneider, 2010b). For some scholars the use of multiple categories is a clear advantage as it substantially reduces both empty truth table rows and logically impossible combinations¹³⁴ (Cronqvist, 2004; Cronqvist and Berg-Schlosser, 2008; Herrmann and Cronqvist, 2009; Thiem, 2013a), while others claim that alternative solutions applied in csQCA (e.g. changing thresholds, creating dummies conditions for all categories) lead essentially to the same number of truth table rows and logical reminders (Schneider and Wagemann, 2012; Vink and Van Vliet, 2013). Fourth, mvQCA could be applied by using ordinal or nominal categories as multi-value conditions (Cronqvist, 2004). Despite this fact, it has been noted that most applications of mvQCA calibrate continuous-based variables as multi-value conditions (Thiem, 2013a). Other scholars rebut this assertion claiming that the great majority of mvQCA empirical applications work with interval level measures that are transformed into ordinal categories

the technique that better fits its research objective, the degree of intimacy with the units of analysis and the type of causal conditions he want to use (i.e. causal conditions with two or three states).

¹³⁴ This line of thought is well synthesized by the following statement: "adding only one more value to an existing condition always leads to half as many added rows as adding one extra dichotomous condition" (Vink and Van Vliet, 2009: 274)

(Cronqvist and Berg-Schlusser, 2008; Vink and Van Vliet, 2009). As a consequence, it seems that scholars have somehow misapplied mvQCA as this technique was specifically created to deal with (not dichotomous) nominal conditions (Vink and Van Vliet, 2009; Vink and Van Vliet, 2013). For others, this is only a problem of scale transformation that does not influence mvQCA (Herrmann and Cronqvist, 2009; Thiem, 2013a). Here the argument is that mvQCA has been developed to preserve the information embedded into the cluster in which we can group the units of analysis. As a consequence, the variable type related to the causal condition is not so relevant from a methodological point of view. In summary, all these methodological quarrels testify that mvQCA is not a yet consolidated variant of CCMs.

6.5 Applying configurational comparative methods to study diffusion

After our discussion on the main techniques used in CCMs, we can turn our attention to discuss how CCMs can contribute to the adoption-motivation debate. It is important to note that vast majority of contributions using CMMs rely on the argument that the number of cases involved in the analysis is too big to apply a qualitative research approach, but too small to apply a quantitative one. Despite this fact, it has been suggested to adopt CCMs only if good theoretical arguments suggest that causal complexity plays a key role in explaining a given social phenomena (Schneider and Wagemann, 2012).

Until now, diffusion studies have applied statistical techniques based on linear algebra to identify those perceived attributes capable to explain adoption decisions. In our study, we are much more interested in examining how these perceived attributes *combine to matter* in adoption decisions. To us, causal complexity is naturally embedded in adoption decisions. Diffusion studies highlight that innovations successfully spread because adopters perceive, in different degrees, an high relative advantage, a low perceived complexity, an high compatibility with their past experiences, an high trialability and an high result observability. On this basis, we expect that various combinations of these attributes could simultaneously explain adoption decisions within the same category of adopters. In this sense, CCMs are valuable tools to identify different, mutually non-exclusive explanations of the decision to become an early or a late adopter.

Similarly, in diffusion studies it is widely acknowledged that relative advantage is not sufficient to explain adoption. For instance, an innovation could not diffuse as it is perceived too complex, even though it grants some advantages compared to alternative solutions. However, if the innovation is also perceived as highly compatible this could lead to adoption. In this sense, the condition 'relative advantage' does not exert its influence in isolation from the causal conditions 'complexity' and 'compatibility'. CCMs shed light on the different causal role that each perceived attribute can play

when combined with other attributes. Therefore, we can identify those perceived attributes that are necessary, sufficient or INUS to explain adoption decisions. Moreover, we can identify core and peripheral conditions in configurations that are sufficient to explain adoption decisions.

Finally, until now diffusion studies did not reveal any causal asymmetry in explaining adoption decisions. In regression-based statistical techniques the relation between the dependent and the independent variables is always symmetric. In essence, each independent variable included in the model has always a positive or a negative effect while predicting the changes in the independent variable. However, the combinations of perceived attributes explaining the adoption decision for an early adopter is not necessarily the same for a not-early one. For the sake of the argumentation, let's consider perceived institutionalization. In early stages of diffusion, we expect that this attribute is perceived as absent by very early adopters. If the innovation successfully spread, late adopters are more likely to perceive it as institutionalized. This is a clear example of causally asymmetric relation among the same causal condition. Admittedly, causally asymmetric relations can be revealed thanks to modified regression approaches allowing multiple interactions among variables (Clark et al., 2006; Grofman and Schneider, 2009). However, these models have strong requests in order to be applied (i.e. the absence of contradictions in empirical observations and the logical irrelevance of missing data) and do not allow the interaction of more than three causal conditions (Schneider and Wagemann, 2012). These limits are easily overcome in CCMs thanks to the use of Boolean algebra and set-theoretic relations. Again, we expect that CCMs could shed new light on the different causal role of perceived attributes in explaining either the presence or the absence of early and late adoption.

To sum up, by applying CCMs we expect to identify several configurations of attributes rather than only the 'best' combination of independent variables capable to predict adoption decisions. Moreover, we expect to shed light on the causal asymmetry and on the different roles that perceived attributes can obtain in these configurations.

6.6 Conclusion

In this chapter we discuss how Configurational Comparative Methods (CCMs) are valuable methodological tools to shed light on causal complexity. In doing so, we have first discussed the logical foundations of these techniques, namely necessary and sufficient conditions, set-theoretic consistency and coverage, contradictory configurations and limited diversity. Then, we have provided an up-to-date review of crisp set qualitative comparative analysis (csQCA), multi value qualitative comparative analysis (mvQCA) and fuzzy set comparative analysis (fsQCA). On this basis we have discuss the potentialities of these methods in explaining how the perceived

characteristics of an innovation combine to matter in adoption decisions. In particular, we want to use fsQCA to identify core and peripheral causal conditions showing how the perceived attributes of network contract (i.e. complexity, compatibility, observability, trialability and institutionalization) combine with expected social and economic gains to explain the early adoption of this new form of strategic alliance.

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PART III

DISCUSSION

<u>PART I - THEORETICAL BACKGROUND</u>	
Ch. 1 - Debating diffusion in new institutional research	<ul style="list-style-type: none"> - Review diffusion in new institutional research - Discuss relations between diffusion, isomorphism, legitimacy and institutionalization
Ch. 2 - Motivations and perceptions in innovation adoption decisions: a framing perspective	<ul style="list-style-type: none"> - Critically review the framing perspective in adoption decisions - Extend the framing perspective using diffusion of innovation theory - Extend the framing differentiating between familiar and non-familiar innovations
Ch. 3 - Research question and research design	<ul style="list-style-type: none"> - Synthesize our intended contribution to the adoption motivation debate
Ch. 4 - Small Business Act and network contract	<ul style="list-style-type: none"> - Review the evolution of network contract legislation - Relate network contract to the Small Business Act - Identify advantages/disadvantages of stipulating a network contract
<u>PART II - METHODOLOGY</u>	
Ch. 5 - Developing an instrument to measure the perceived attributes of network contracts	<ul style="list-style-type: none"> - Explain why network contract can be considered a diffusing innovation - Discuss how to measure the perceived attributes of an innovation - Develop a set of items measuring the perceived attributes of a network contract
Ch. 6 - Configurational Comparative Methods as a new way to shed light on causal complexity	<ul style="list-style-type: none"> - Shed light on the acronyms and definitions used in CCMs - Discuss the logical foundations of CCMs - Review the techniques used in CCMs (csQCA, mvQCA and fsQCA) - Discuss how CCMs can contribute to the adoption motivation debate
<u>PART III - DISCUSSION</u>	
Ch. 7 - The early diffusion of network contract	<ul style="list-style-type: none"> - Apply fsQCA to the early diffusion of network contract - Discuss the alternative configurations explaining early and not-early adoption - Verify the robustness of results

Chapter 7

THE EARLY DIFFUSION OF NETWORK CONTRACT

In this chapter we apply fsQCA to understand how the perceived attributes of network contract combine to explain its early adoption among industrial firms operating in Friuli Venezia Giulia and in the eastern part of Veneto. We first discuss the 'theoretical sampling' usually applied in CCMs to identify those cases that will be included in the analysis (section 7.2). Then, we describe the process of calibration for the outcome and the causal conditions (section 7.3). On this basis, we identify necessary and sufficient causal conditions for earliness of adoption (section 7.4 and 7.5) and for not-earliness of adoption (section 7.6). On this basis, we discuss the main findings of our research (section 7.7). Finally, we assess the robustness of fsQCA results (section 7.8).

7.1 Introduction

In our research we want to use fsQCA to understand how the perceived attributes combine to explain the 'earliness of adoption', i.e. the very early adoption of the network contract. Several reasons justify the use of this CCMs technique. First, fuzzy sets contain more fine-grained information than crisp sets as they allow to identify quantitative and qualitative differences among units of analysis. Second, parameters of fit in fsQCA have higher standards than csQCA (Schneider and Wagemann, 2012). Third, in our research we'll use concepts for the outcome and the causal conditions that are not dichotomous by nature. For the sake of the argumentation, let's imagine three firms labeled as X, Y and Z. Firm X and firm Y are adopters of network contract, while firm Z is not. In such situation, the concept represented in the set 'early adoption' identifies a qualitative difference (i.e. crisp) among the observed cases. Let's now imagine that firm X adopted the contract in September 2010 and firm Y signed it in December 2013. While both firms could be considered as early adopters, these cases also display a quantitative difference. Simply speaking, we can classify these organizations as 'very early adopters', 'somewhat early adopters' or 'not early adopters' according to the moment of adoption. Similarly, we'll use causal conditions that could hardly be considered as simply crisp situations. For instance, two firms could perceive network contract as compatible with their past experiences and collaboration values (i.e. they are both above the qualitative anchor of 0.5). However, one firm could perceive the contract as more compatible, i.e. it could have a greater degree of membership in the causal condition than the other.

The chapter is organized as follows. First, we discuss the theoretical sampling we have applied to select a relatively common group of adopters of network contract (section 7.2). Then, we discuss the calibration applied to assign membership scores in both the causal conditions and in the outcome (section 7.3). On this basis, we are able to identify necessary (section 7.4) and sufficient causal conditions (section 7.5). Due to the fact that CCMs allow causal asymmetry, we repeat the described procedure to identify necessary and sufficient conditions for not-earliness of adoption

(section 7.6). Then, we identify core and peripheral causal conditions capable to explain why network contract has been adopted in the early stages of its diffusion (section 7.7). Finally, we assess the robustness of results by using different levels of calibration and consistency (section 7.8).

7.2 Selection of cases

The use of the so-called 'theoretical sampling' in applied CCMs directly arises from the qualitative roots of this family of techniques (Berg-Schlosser and De Meur, 2008; Rihoux and Lobe, 2008; Schneider and Wagemann, 2012). In a nutshell, the selection of cases is driven by the research questions and the context of analysis rather than by the sampling procedures normally used in statistical techniques based on linear algebra. We are not saying that CCMs and random sampling are incompatible at all. For instance, Bromley and colleagues (2012) apply csQCA based on a random sample representative of the population of not-for-profit organizations in San Francisco area. However, in small and intermediate-N research designs the cases have to be purposively selected to answer to research questions, to share a relatively comparable contexts (or features) that could be considered as constants and to display some meaningful variation in the outcome and in the causal conditions¹³⁵ (Rihoux, 2006; Rihoux and Lobe, 2008). By contrast, in large-N research designs a greater variety in the units of analysis is allowed (Rihoux, 2006; Rihoux and Lobe, 2008). In CCMs, the inclusion of cases into the analysis has to be justified using theoretical and/or empirical knowledge (Ragin, 1994). These criteria have to be transparently declared to help research verifiability (Berg-Schlosser and De Meur, 2008; Ragin, 1987; Wagemann and Schneider, 2010b) and to delimit the temporal and spatial boundaries of the phenomena being studied (Fiss, 2008; Ragin, 1992a; Ragin, 1992b). We also want to highlight that in CCMs the inclusion or exclusion of new cases is possible in all the phases of the research. This is another major distinction with a sampling procedure representative of the entire population. In this latter case, once the sample is created it is not possible to add or to drop cases. Elsewhere it has been ironically argued that

"While those using regression approaches may also consider many different combinations of variables, they are unlikely to redefine the universe of relevant cases by adding or dropping cases. Indeed, doing so is often regarded as 'cheating'" (Schneider and Grofman, 2006: 11)

In CCMs the inclusion or exclusion of cases has always to be justified from a theoretical or empirical point of view. For instance, a preliminary analysis could lead the researcher to extend the

¹³⁵ Clearly, these general statements are influenced by some pragmatic considerations on the degree of intimacy with the cases, on the funds available to perform the research and on the accessibility of sources of data (Berg-Schlosser and De Meur, 2008).

spatial and temporal boundaries of the phenomena being studied to reduce the problem of limited diversity. Similarly, a case can be dropped from the analysis as it can undermine the statement of sufficiency of causal paths.

In order to study the early diffusion of network contract, we first have to define the temporal boundaries of the phenomena under study. In doing so, we rely on the public-available list of network contracts published by the Italian Chamber of Commerce covering the period February 2010 - April 2013. This list contains the month and the year in which the contract was signed, the object of the strategic alliance and some data on the firms that have signed the agreement (i.e. legal name, VAT number, sector of activity and ATECO code). On this basis, we analyze the process of diffusion of network contract among industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto. Several reasons support this choice. First, this area provides a relatively homogeneous economic and social context suitable to perform an explorative research. Second, a limited territorial area and a well-identified group of firms allow to identify a limited set of change agents to which adopters are exposed (e.g. the Chamber of Commerce, the local Confederation of Italian Industries and the Association of Business Consultants). Hence, we can say that adopters are subjected to roughly the same sources of information capable to reduce the uncertainty embedded in adoption decisions, allowing us to focus on the perceived attributes of the innovation. Finally, the great familiarity we have with our research context is capable to provide useful empirical knowledge while performing fsQCA.

According to the previously discussed criteria, 85 firms have signed a network contract until April 2013. We have interviewed 54 entrepreneurs and organizational decision makers that chose to stipulate this cooperative agreement. This group of respondents constitutes a substantial percentage of adopters in a relatively limited geographical area (i.e. 65%). This number of cases is also sufficient to apply fsQCA. Until now, we have claimed several times that CCMs could be applied to small-N and intermediate-N research designs. We want to precise that, similarly to statistical techniques, CCMs require a certain proportion between the number of the units of analysis and the causal conditions (Marx, 2006; Marx, 2010). Using an experimental design, Marx has related the number of causal conditions to a minimum number of cases in order to obtain meaningful results¹³⁶. Due to the fact that in this research we are using seven causal conditions, we need a minimum number of 30 units of analysis to apply fsQCA.

¹³⁶ Marx (2006) has originally crafted the analysis on csQCA. However, the thresholds has been recalled also while performing fsQCA (Fiss, 2011).

7.3 Calibrating set membership

In order to perform fsQCA, we need to calibrate both the outcome of interest and the causal conditions. Hence, we need to respectively calibrate:

- the earliness of adoption, i.e. the early adoption of the network contract;
- the perceived attributes of the network contract.

We'll discuss these aspects separately. The outcome of this phase is a data matrix displaying the cases in the rows and related fuzzy membership scores in the columns. This data matrix will be used to evaluate the presence of necessary and sufficient conditions in the next phase of our analysis.

7.3.1 Calibrating earliness of adoption

The basic idea of calibration is to attach a truth value (and not a probability) to a conceptual statements referring to a target set (Ragin, 2008a). In our research, this means assign a truth value to the following statement: 'the firm is an early adopter of network contract'. The earlier the adoption of the contract, the higher will be the resulting membership score. Therefore, we'll attribute full membership to those firms that have signed the contract immediately after the emanation of the legislation, while full-non membership is attributed to more recent adopters.

In doing so, we use the list of network contracts published by the Italian Chamber of Commerce as an external benchmark. This document, covering the period February 2010 - April 2013, provides the date in which each contract was signed. We have divided this time span in two-months periods and assigned each adopter to one of them. This strategy allows us to carefully map the diffusion process among Italian firms.

As we can easily see from the frequency table (see table 1), the first contracts were signed in March 2010 (i.e. second semester 2010 or 2_2010), while the half of the distribution was reached in April 2012. On this basis, we can use the percentiles to identify the very early adopters and the not-early adopters of network contract. The former category follows in the 25th percentile, while the latter follows in the 75th percentile. Therefore, we define a firm that signed the network contract before November 2011 (i.e. 5_2011) as fully-in, while adopters after November 2012 (i.e. 5_2012) as fully out of the set. The point of maximum ambiguity is assigned to April 2012, which roughly correspond to the moment in which half of the adopters was reached. To sum up, November 2011, November 2012 and April 2012 will be respectively the qualitatively anchors for full membership, full non membership and the crossover point.

Table 1- Process of diffusion of network contracts February 2010 - April 2013

Two-month period	Contract signed in the two-month period	% of contracts	Cumulative %
2_2010	44	1,1%	1,1
3_2010	11	0,3%	1,4
4_2010	24	0,6%	1,9
5_2010	48	1,2%	3,1
6_2010	48	1,2%	4,3
1_2011	71	1,7%	6,0
2_2011	100	2,4%	8,4
3_2011	98	2,4%	10,8
4_2011	303	7,4%	18,2
5_2011	399	9,7%	27,9
6_2011	305	7,4%	35,4
1_2012	299	7,3%	42,7
2_2012	251	6,1%	48,8
3_2012	380	9,3%	58,0
4_2012	344	8,4%	66,4
5_2012	389	9,5%	75,9
6_2012	555	13,5%	89,4
1_2013	288	7,0%	96,4
2_2013	146	3,6%	100,0

Source: own elaboration

7.3.2 Calibrating causal conditions

Similarly to the outcome of interest, causal conditions need to be calibrated in order to perform fsQCA. Until, now diffusion studies have measured the perceived attributes in terms of 'levels' using Likert scales in order to identify variations in perceptions capable to explain the moment of adoption. For instance, high expected economic benefits are good predictors of being an early adopter, while low perceived compatibility or high perceived complexity in using the innovation do not. One could argue that a calibrated causal condition is simply a 'new bottle for old wine', a new label to identify independent variables. Indeed, this label change also implies a conceptual change. In practical terms, we have to express the perceived attributes in terms of well-specified groups of adopters rather than in term of variations in perceptions. For instance, the level of expected economic benefits has to be transformed into the set of 'firms perceiving network contract as economically advantageous'. Indeed, this transformation is not as simple as it could appear. The reason relies on the fact that the conceptual definition of the set alters the calibration procedure, the resulting membership scores and the overall findings. For instance, the target set for the concept 'expected economic benefits' might be "organizations that believe that signing the network contract will have strong economic advantages", "...will have very strong economic advantages" or "...will have some economic advantages". An adopter believing that network contract will lead to relatively

limited economic benefits is 'more in than out' in the latter set (i.e. it will obtain a membership score between 0.51 and 1), while it can be reasonably considered as fully out in other two sets (i.e. it will obtain a membership score of 0). In our analysis, we choose to define the sets of perceived attributes as follows:

- Expected economic benefits (EB): firms believing that network contract will provide economic benefits;
- Expected social benefits (SB): firms believing that network contract will provide social benefits;
- Compatibility (CMP): firms believing that network contract is coherent with their past experience and collaboration values;
- Complexity (CLP): firms believing that network contract is difficult to negotiate and to renegotiate;
- Trialability (TR): firms believing that it easy and cheap to reverse the adoption decision;
- Results observability (OBS): firms believing that the results obtained using the innovation are easily observable;
- Institutionalization (IST): firms believing that network contract is a stable part of the business environment.

Ragin clearly warns from the risk to conflate fuzzy sets with ordinal or interval scales¹³⁷ (Rihoux and Ragin, 2008). In an ordinal scale categories are constructed to identify a rank order. By contrast, fuzzy set incorporate empirical and theoretical knowledge capable to elucidate both qualitative and quantitative differences. Therefore, it is possible that the two lower ranks of an ordinal scale are translated as "fully out", while the two ones are classified as "fully in" (Rihoux and Ragin, 2008). A direct transformation is possible only when the content of the ordinal categories is coherent with the conceptualization of the fuzzy set. In other cases, researchers have to clarify how to transform ordinal variables into sets capable to shed light on qualitative differences. Schneider and Wagemann (2012) masterfully synthesize this point while stating:

"The step from a fuzzy value of 0.4 to 0.6 is something different from the step from 0.1 and 0.3. Although the quantitative difference is in the degree of membership is 0.2 in both situations, there is a qualitatively different

¹³⁷ Measurement scales are traditionally classified into nominal, ordinal, interval and ratio (Hair et al., 2009). A *nominal scale* (or categorical scale) simply describe a difference in type by assigning a numerical label to indicate the presence or the absence of an attribute (e.g. gender, nationality or level of proficiency). An *ordinal scale* (or ranked scale) assigns a rank according to the amount of the attribute possessed. Due to its not-metric nature, an ordinal scale does not allow to perform any arithmetical operation (e.g. differences among ordinal values). An *interval scale* enables the measurement on the value (or the magnitude) of an attribute (e.g. temperature scales) thanks to the use of constant measurement units (i.e. a constant interval between each point forming the scale) and the use of an arbitrary "zero point". Finally, a *ratio scale* are essentially interval scales with an absolute "zero point", allowing to perform any mathematical operation (e.g. we can say that a value of the scale is a multiple of another value).

situation: in moving from 0.4 to 0.6 the qualitative anchor of 0.5 is crossed. While 0.6 indicates that the case is more like a member of the set, 0.4 tells us that it is more of a non-member of the set. The fuzzy values of 0.1 and 0.3 indicate, instead, that both cases are on the same side of the point of indifference and thus both indicate non-membership, although with different degrees" (Schneider and Wagemann, 2012: 30)

In essence, the idea is to identify a cross-over point capable to qualitatively and quantitatively differentiate cases in the set using, if possible, theoretical and empirical knowledge. Clearly, this process of calibration depends on the underlying definitions of the concept and on the research context. In order to facilitate calibration, several scholars have developed 'modified' Likert scales in which the extremities of the scale directly correspond to the points of maximum exclusion and maximum inclusion in the set (Basurto, 2013; Basurto and Speer, 2012; Kent, 2008; Kent, Forthcoming). For instance, Basurto (2013) combines three dimensions to measure the causal condition labeled as "local autonomy": financial autonomy (measured with 2 items), administrative autonomy (2 items) and operational autonomy (1 item) in different periods. Each item is measured using a 5-point measurement scale ranging from "mostly" to "never" corresponding to the possible membership scores. The degree of membership is simply the average score of the three dimensions. Similarly, Fiss (2011) combines several items into a scale, but full membership in a causal condition is assigned only when a respondent uses the upper value of the scale.

By contrast, other scholars suggest to use the distribution of responses to assign set membership (Crilly, 2013; Kent, 2008). In essence, respondents have to express their level of agreement (or disagreement) on a group of items using a pre-codified list of responses formed on symmetric categories around a midpoint (e.g. strongly agree, agree, undecided, disagree, strongly disagree). It is important to note that these responses measure the level of agreement/disagreement without being the direct translation of the concept, as previously discussed for 'modified' scales. Due to the fact that the items are interrelated, they need to be combined (i.e. summated, averaged or combined using a factor analysis) to meaningfully represent the underlying concepts. On this basis, several solutions have been proposed. For instance, Crilly (2013) applies the direct method of calibration to the distribution of the regression factor scores¹³⁸. While full membership and full non-membership are respectively assigned to those cases in the upper and in the lower quartile, the crossover point is assigned to the mean across all respondents (Crilly, 2013). Similarly, other relevant percentiles in the distribution of responses could be used as qualitative anchors¹³⁹ (Fiss, 2011; Whittington et al., 2013). Finally, the interval values for "2.Disagree", "4.Neutral point" and "6.Agree" in a 7-point

¹³⁸ "The regression method of obtaining the factor scores produces score with a mean of 0 and a variance equivalent to the square of the correlation between the factor estimates and the true factor values" (Crilly, 2013: 189)

¹³⁹ For instance Fiss (2011) uses the 1st, the 50th and the 99th percentiles to calibrate administrative complexity (i.e. a combination of vertical and horizontal differentiation), while Whittington and colleagues (2013) use the 25th, the 50th and the 75th percentiles to evaluate managerial leadership.

scale are directly related to the qualitative anchors for full non-membership, crossover point and full membership (Erkens and Van Der Stede, Forthcoming; Munoz and Kibler, Forthcoming; Park and El Sawy, 2013; Whittington et al., 2013).

Due to the fact that no clear guideline seems to emerge, we have chosen to calibrate causal conditions using the distribution of responses. We have chosen this strategy for several reasons. First, we consider summated scales as the more suitable tool to perform data reduction in our research. The use of total score is preferable when replicability is desired and the scale has proven to be a well-constructed and valid instrument¹⁴⁰ (Hair et al., 2009). Second, there is no external benchmark we can use to calibrate perceptions. While the use of external benchmarks is encouraged (Ragin, 2000; Ragin, 2008a; Ragin, 2008b), the distribution of responses is a valuable alternative if it is not possible to assign qualitative anchors using them. Third, we have used 7-point Likert scales ranging from "Extremely disagree" to "Extremely agree" in order to measure perceived attributes. Each scale was constructed in such way that the greater is the total score, the more positive is the attitude toward the construct.

While performing calibration, it is also important to distinguish between relevant and irrelevant variations. For instance, one attribute measures the perceived complexity in negotiating (and renegotiating) network contract. The distinction among "it's difficult to negotiate the contract" and "it's very difficult to negotiate the contract" is perhaps irrelevant as these responses are both considered 'more in than out'. However, this is not true in absolute terms. For instance, if we want to analyze the set 'firms that find extremely difficult to negotiate the contract' the distinction among these answers is probably relevant (i.e. we need to assign different membership scores). In sum, we need to identify meaningful qualitative anchors according to the objective of our research.

On this basis we assign full membership to responses of (6) in the scale and full non-membership to responses of (2). The crossover point is assigned to the neutral point in the scale¹⁴¹. For the sake of the argumentation, let's consider the perceived attribute of 'economic benefit'. If respondents choose the two highest values in the scale (i.e. "7. Extremely agree" or "6. Agree"), they are signaling that they were perceiving a clear economic benefit. By contrast, a clear absence of economic advantages emerges if respondents choose the lower values (i.e. "1. Extremely disagree"

¹⁴⁰ The use of factor scores is encouraged when researchers desire to maintain independence among variables as "the factor score is computed based on the factor loadings of all variables on the factor, whereas the summated scale is calculated by combining only selected variables" (Hair et al., 2009: 168). Due to the fact that a different factor matrix is derived in each study, factor scores are not easily replicable. Moreover, the interpretation of the results in the subsequent analysis is much more complex as the latent variables are measured using loadings rather than variations in the sum or in the average.

¹⁴¹ A total score between (2) and (4) is coherent with the idea that the respondent perceives more or less no economic benefits from the adoption decision (i.e. the respondent is more out than in the set). Similarly, a total score between (4) and (6) suggests that the adopter is 'more in than out' of the set as an economic benefit is expected, but it is not so clear (i.e. more or less economic benefit).

or "2. Disagree"). Moreover, we have collected the perceptions on the attributes of the adopters of network contracts thanks to telephone interviews. Therefore, we are quite confident on the quality of the information collected in comparison to a simple survey sent by email.

It has also been suggested to avoid, whether possible, a cross over point of 0.5. We have previously highlighted that, in order to be assigned to a truth table row, a case must have a partial membership score greater than 0.5 in only one of the possible logical combinations. If this requirement is satisfied in more than one row, the fsQCA software is simply not able to attribute the case to a corner of the property space. However, this situation could be easily solved by adding or subtracting a small constant (i.e. 0.001) to all causal conditions below full membership score (Fiss, 2011; Ragin, 2008a). Following the idea that a neutral attitude towards a construct is out of the category "Agreement" (Kent, forthcoming), we decided to subtract a value of 0.001 to all causal conditions displaying a value of 0.5.

7.4 Analysis of necessary conditions

In order to identify meaningful necessary conditions, we first need to separately test the necessity of each perceived attribute. Three reasons explain such strategy. First, non-necessary conditions cannot form a conjoint condition (i.e. a new condition formed using the logical operator AND) that is necessary by itself¹⁴². Second, the use of the logical operator OR is more likely to produce a necessary condition as it assigns the maximum membership score displayed in the original conditions. As a result, the new set created by the operator OR includes more cases than the sets representing the original conditions, increasing the likelihood to find a superset relation with the outcome. Due to the relatively ease on which necessary conditions could emerge using logical OR, this Boolean operator has to be used only when "strong and plausible theoretical and substantive arguments to support the claim that the conditions combined by logical OR operate as functional equivalents of some higher order concept" (Schneider and Wagemann, 2012: 74). Finally, the analysis of necessity allows to avoid incoherent counterfactuals in the analysis for sufficiency. If a condition is necessary to reach the outcome, a logical reminder containing the absence of the condition and the presence of the outcome is clearly incoherent¹⁴³.

¹⁴² Therefore, "only if two or more single conditions pass the necessity test does it make sense to investigate whether a logical AND combination between these individually necessary conditions also qualifies as a necessary condition. In some circumstances there will be such a combination and in others there will not" (Schneider and Wagemann, 2012: 73).

¹⁴³ In particular, "if a researcher claims that X is necessary for Y, than any logical reminder row that implies condition NOT X cannot be used for a counterfactual claim following which it would produce outcome Y"(Schneider and Wagemann, 2012: 199).

In order to identify not-trivial necessary causal conditions fsQCA software automatically generates two measures: consistency and coverage. A causal condition is considered as necessary (or almost always necessary) if it exceeds the threshold consistency value of .90. Similarly, a non-trivial necessary condition has an high value of coverage (i.e. trivially necessary causal conditions have a value of coverage near zero). We report the values for consistency and coverage for all the causal conditions (see table 2).

Table 2- Analysis of necessary conditions for the presence of the outcome

Causal condition	Consistency	Coverage	Causal condition	Consistency	Coverage
EB	0.785	0.829	~CPL	0.631	0.781
~EB	0.268	0.802	TR	0.786	0.820
SB	0.844	0.798	~TR	0.253	0.789
~SB	0.190	0.859	OSB	0.140	0.787
CMP	0.820	0.825	~OBS	0.897	0.814
~CMP	0.225	0.786	IST	0.008	0.463
CPL	0.420	0.888	~IST	0.953	0.876

Source: fsQCA software

We can easily see that the absence of perceived institutionalization ("~IST") has a consistency value superior to the requested threshold and an high value of coverage. Moreover, the absence of observability ("~OBS ") has a value extremely closed to the threshold indicating a substantial superset relation. On this basis, we decide to retain both of these conditions in the analysis. These findings are logically coherent as network contract is in the early stages of its diffusion. In simple terms, we can expect that early adopters of an immaterial innovation find extremely difficult to observe the results obtained by previous adopters. Moreover, it is also logical to expect that a non-familiar innovation is still perceived as a not-yet stable form of organizing cooperation activities.

7.5 Analysis of sufficient conditions

In the analysis of sufficient conditions, the Truth Table Algorithm automatically converts the data matrix into truth table rows. In doing so, the Algorithm assigns each case to the configuration in which its membership exceeds 0.5. Due to the fact we have used 7 perceived attributes, there are 128 logically possible combinations of causal conditions explaining adoption decision. Therefore, the likelihood to not empirically observe all these combinations is quite high. In other terms, we expect to find an high number of empty truth table rows (logical reminders).

In order to identify logical reminders, we set the frequency cut-off to one (i.e. a truth table row becomes a logical reminder if it does not contain any case). Two reasons explain the choice of this threshold. First, configurational scholars have suggested to use a cutoff that includes more than 75% of the cases originally included in the analysis. Second, cut-offs greater than one are usually applied to research designs involving a great number of cases or imprecise set-calibration. The chosen cut-off allows to perform the analysis on 100% of the available cases, maximizing the coverage of sufficient conditions.

Each non-reminder row has its own consistency value measuring whether the condition is sufficient for the outcome or not. The value of 0.75 is accepted as threshold to consider a given ideal type as sufficient in reaching the outcome (Ragin, 2008b; Rihoux and Ragin, 2008). However, several guidelines have been identified to refine the rule of thumbs used to assess the consistency of sufficient conditions (Schneider and Wagemann, 2012). In particular, the consistency score for sufficiency have to be increased when:

- there is a great and precise expectation coming from the literature that the causal condition is sufficient to reach the outcome;
- there is an high confidence on the precision and validity of the calibration procedure;
- there is a relatively small number of cases involved in the analysis (i.e. small-N research designs);
- there is a great number of logically contradictory cases.

On this basis, we choose the threshold of .80. We report here the truth table generated by the software, deleting empty truth table rows (see table 3). We just want to highlight that the software relates each row to the expected outcome. In our research, the expected outcome is contained in the column labeled as 'EAR'. As noted by Schneider and Wagemann (2012), this column simply indicates if the researcher believes that a truth table row is considered as sufficient or not to reach the outcome. In the former case, we assign the value of 1 to the truth table row, in the latter the value of 0.

At a first glance, one could argue that the Truth Table Algorithm simply transforms fuzzy sets into crisp sets while assigning cases to truth table rows. Put differently, the quantitative differences existing among cases that are both 'more in than out' (or 'more out than in') seem to be lost. However, original fuzzy set values are still used when calculating consistency values for logical reminders, solution coverage and solution consistency (Schneider and Wagemann, 2012).

Table 3- Software output for the analysis of sufficient conditions for the presence of the outcome

Row Number	EB	SB	CMP	CPL	TR	OBS	IST	EAR	Number of cases	RAW
1	1	1	1	1	0	0	0	1	2	0.949999
2	1	0	1	0	0	1	0	1	1	0.949076
3	0	1	1	1	0	0	0	1	1	0.948012
4	0	1	1	0	0	0	0	1	1	0.939851
5	0	0	1	0	1	0	0	1	3	0.935237
6	0	1	1	0	1	1	0	1	1	0.928574
7	1	0	0	0	0	0	0	1	1	0.919014
8	1	1	1	1	1	1	0	1	1	0.907893
9	1	1	1	0	1	0	0	1	13	0.898334
10	0	1	1	1	1	0	0	1	1	0.897061
11	1	1	1	1	1	0	0	1	6	0.890339
12	1	0	1	1	1	0	0	1	1	0.881185
13	1	1	0	1	1	0	0	1	1	0.880904
14	0	1	0	0	1	0	0	1	2	0.876382
15	1	1	0	0	1	0	0	1	1	0.866809
16	0	1	0	1	1	0	0	1	1	0.864641
17	1	1	1	0	0	0	0	1	5	0.862828
18	1	0	1	0	1	0	0	1	2	0.847737
19	0	1	1	0	1	0	0	1	2	0.824859
20	0	0	0	0	0	0	0	0	1	0.747672
21	1	1	1	1	1	1	1	0	1	0.730000
22	0	1	1	0	0	0	1	0	1	0.721461
23	1	1	1	1	1	0	1	0	1	0.673284
24	1	1	1	0	1	1	1	0	1	0.628788
25	1	1	0	0	1	0	1	0	2	0.510472
26	1	1	1	0	1	0	1	0	1	0.494062

Source: fsQCA software

As we can easily see from the truth table, the rows from 1 to 19 seem to pass the sufficiency test. However, the assessment of sufficiency cannot be limited to the analysis of the consistency values reported by the software (Ragin, 2008b). These values are calculated using a mathematical formula capable to identify only the proportion inconsistent cases, i.e. those cases contradicting the statement of sufficiency. However, certain inconsistent cases could be 'true logical contradictions' (TLCs), i.e. cases that are 'more in than out' in the sufficient condition and 'more out than in' in the outcome. If a truth table row with relatively high consistency values contains several TLCs, the researcher has to pose into question its sufficiency to reach the outcome. There is no rule of thumbs on the number of logical contradictions that a consistent row could contain without losing its sufficiency. Due to the fact that it has been suggested to transparently discuss these aspects (Schneider and Wagemann, 2012), we have calculated the number of TLCs (see table 4). We can

easily see that none of the statements of sufficiency seem to be undermined by an high number of TLCs.

Table 4- Inconsistent cases and TLC

Row Number	Inconsistent cases	True Logical Contradiction
1	4	0
2	5	0
3	4	0
4	5	0
5	6	0
6	5	0
7	6	0
8	5	0
9	7	1
10	6	0
11	7	1
12	5	0
13	6	0
14	7	0
15	7	0
16	6	0
17	6	1
18	6	0
19	7	1

Source: own elaboration

After this preliminary analysis, we apply the Enhanced Standard Analysis (ESA) (Schneider and Wagemann, 2012). The possibility granted by this analysis to exclude incoherent assumptions from the logical minimization has the advantage to calculate the real coverage and consistency values of the solution formula¹⁴⁴. In doing so, we have to exclude from the analysis implausible assumptions and incoherent ones. In the former case, we need to identify impossible reminders, i.e. hypothetical logical combinations that cannot simply exist in real world. For instance, a 'dictatorial democracy' is a case of incoherent truth table row that has to be excluded from the analysis. Due to the fact that we are working with perceptions, we cannot find such implausible assumptions. In the latter case, we have adopted the following strategies:

- in order to exclude those logical reminders contradicting the analysis of necessity, we have dropped from the analysis the rows 2,6 and 8 by simply assigning a value of 0 in the truth

¹⁴⁴ Ragin and Sonnett (2004) suggest an alternative strategy to deal with hidden necessary conditions. According to this strategy, the necessary causal condition has to be manually added to each sufficiency path leading to the outcome. Despite its easiness of use, this strategy does not allow to calculate correct values of coverage and consistency.

table (Schneider and Wagemann, 2012). As we can easily see from the consistency values above 0.80, the software considers these rows as sufficient to explain early adoption. However, these configurations contain IST and OBS, contradicting the findings of the necessity test according to which \sim IST and \sim OBS are necessary conditions. If the contradictory rows are included in the minimization algorithm, we'll end up with a solution term in which \sim IST and \sim OBS are not present in all the causal paths leading to the outcome;

- in order to avoid simultaneous subset relations, we have verified that none of the truth rows is simultaneously sufficient for the presence and the absence of the outcome. In simple terms, a configuration "can be interpreted as sufficient either for the *outcome* or for the *negation of the outcome* or for neither, but certainly not for both" (Schneider and Wagemann, 2012: 241). Due to the absence of simultaneous subset relations, no particular decision is needed.

In order to treat logical reminders, we need to identify the directional expectations on causal conditions. We are quite lucky on this aspect as diffusion of innovation theory provides a wide empirical evidence on how the perceived attributes influences adoption decisions. Therefore, we expect that the presence of expected economic benefits, expected social benefits, perceived compatibility, perceived institutionalization and observability of results support the earliness of adoption. Similarly, the absence of perceived complexity explains the early adoption of an innovation.

7.6 Analyzing the absence of early adoption

Due to the fact that fsQCA allows to asymmetric causality, we have to replicate the analysis by negating the outcome "earliness of adoption". It is important to clarify that being 'not an early adopter' does not necessarily mean to be a 'late adopter'. This conceptual distinction is important in CCMs as a complement of a set is not necessarily equal to its conceptual counterpart. Therefore, in our analysis we are not analyzing the behavior of late adopters of network contact as we do not have the entire process of diffusion of the strategic alliance.

In order to identify necessary and sufficient conditions for the complement of the earliness of adoption, we'll apply the same thresholds and the same procedure previously used. The test of necessity suggests that none of the causal conditions involved in the analysis scores above the minimum consistency threshold of 0.90. In the analysis of sufficiency, we set to one the minimum number of cases to not consider a row as a logical reminder. For non-reminder rows, we set the consistency threshold to 0.80 to consider a truth table row as sufficient to reach the outcome. This

threshold allows to identify four truth table rows including only six cases. This limited number of cases is the direct consequence of the use of the external benchmark applied to calibrate the responses obtained.

Finally, we need to assign the values of counterfactuals. One could argue that this is an easy task as all these counterfactuals are simply the reverse of those used to investigate the earliness of adoption. To rebut this claim, we simply recall the fact that the directional expectations have always to be theoretically grounded. In our research we are studying the process of diffusion of a non-familiar innovation in its early stages. Therefore, the directional expectations explaining the not-earliness of adoption have to consider that we are still investigating the perceptions of early adopters. Maybe these firms are a bit latecomers if compared to those that have signed the contract immediately after the issue of the legislation, but they are clearly not late adopters. As a consequence, we expect that the presence of expected economic and social benefits still explains adoption decisions. This is logically coherent with the framing perspective according to which early adopters are motivated to obtain social and economic benefits rather than avoiding losses. The other directional expectations are directly derived from diffusion of innovation theory. According to this theory, the choice to postpone adoption decisions relies on the presence of perceived complexity and on the absence of compatibility, trialability, institutionalization and result observability.

7.7 Result discussion

The fsQCA software automatically generates the Boolean expressions for the complex, intermediate and parsimonious solutions. For instance, in our analysis the intermediate solution for the presence of the outcome is synthesized as follows:

$$\text{EAR} = \sim\text{ist}*\sim\text{obs}*\sim\text{cpl}*\text{eb} + \sim\text{ist}*\sim\text{obs}*\text{tr}*\text{sb} + \sim\text{ist}*\sim\text{obs}*\text{cmp}*\text{sb} + \sim\text{ist}*\sim\text{obs}*\text{tr}*\sim\text{cpl}*\text{cmp} + \sim\text{ist}*\sim\text{obs}*\text{tr}*\text{cmp}*\text{eb}$$

In the solution, we can easily identify the outcome of interest and the perceived attributes. The symbol "*" is the logical operator AND, elucidating that a given attribute combines with others in a configuration sufficient to explain the outcome. The symbol "~" (i.e. the logical operator NOT) simply indicates that a given causal condition is negated. Finally, the symbol "+" identifies the logical operator OR. This latter operator allows to identify the alternative causal paths leading to the outcome of interest.

In order to make these results more understandable, we have chosen the graphical representation proposed in Ragin and Fiss (2008) and in Fiss (2011). This graphical representation allows

to synthesize the same information contained in a Boolean expression. Moreover, it allows to compare the intermediate and the most parsimonious solutions by identifying three types of causally relevant conditions:

- "core causal conditions", graphically represented by large circles. As the names suggest, core conditions are those that display a strong causal relation with the outcome of interest as they are both part of the parsimonious and intermediate solutions;
- "peripheral causal conditions", graphically represented by smaller circles. These conditions appear in the intermediate solution only;
- "don't care situation", graphically represented by blank spaces as the causal condition could be either present or absent in reaching the outcome of interest.

The presence of a causal condition is indicated by a black circle, while circles with a cross out indicate its absence.

Figure 1 - Configurations explaining earliness of adoption

	Configurations explaining early adoption				
	1	2a	2b	3a	3b
Expected economic benefits	●				●
Expected social benefits		●	●		
Compatibility			●	●	●
Complexity	⊗			⊗	
Trailability		●		●	●
Observability of results	⊗	⊗	⊗	⊗	⊗
Institutionalization	⊗	⊗	⊗	⊗	⊗
Consistency	0,88	0,89	0,88	0,87	0,91
Raw Coverage	0,47	0,61	0,63	0,44	0,52
Unique Coverage	0,03	0,05	0,06	0,03	0,03
Overall Solution Consistency	0,88				
Overall Solution Coverage	0,82				

Source: own elaboration

As we can see from figure 1, there are three configurations leading to the early adoption of network contract. In each configuration a condition is an INUS condition, i.e. it is causally relevant only in combination with other perceived attributes. As we can easily see, configuration 2 and configuration 3 contains neutral permutations. In other words, "within a given configuration more than one constellation of different peripheral causes may surround the core causal condition, and the permutations do not affect the overall performance of the configuration" (Fiss, 2011: 398). The overall solution formula has a consistency value of 0.88. This value supports the idea that the three configurations are sufficient to explain early adoption. A value of solution coverage closer to 82% suggests that the three alternative causal paths account for a substantial proportion of the observed cases. In the presence of multiple solution paths, it is necessary to analyze the coverage of each of them using the following two measures:

- raw coverage, measuring how much of the outcome set is covered by a specific causal path;
- unique coverage, measuring how much of the outcome set is covered by non-overlapping causal paths.

As the analysis of raw coverage suggests, we find that each configuration accounts for a substantial proportion of cases. The low levels of unique coverage does not signals that our results are somehow 'bad'. A value of an unique coverage greater than zero has two implications. First, solutions with zero unique coverage emerge because logically redundant prime implicants have been included in the solution term (Schneider and Wagemann, 2012). Second, low values of coverage simply signals that the configurations are overlapping. The use of unique coverage has its roots in the use of a non-exclusionary logical OR in CCMs, i.e. a logical operator allowing to a single case to be part of more than one sufficient configuration (Schneider and Wagemann, 2012). If a given causal path does not overlap with others, raw coverage and unique coverage will be identical. While analyzing equifinal and causally complex solution terms, it has been suggested to focus on how the causal conditions combine rather than on the presence/absence of single conditions (Schneider and Wagemann, 2012). This general rule does not apply if a single condition is considered as theoretically relevant by itself to produce (or to prevent) the outcome of interest. Before starting the discussion on the configurations, we signal that all configurations displays the two following causal conditions: \sim IST and \sim OBS. We simply recall that these conditions were considered as necessary.

Configuration 1 suggests that, even though the contract is perceived as not a stable part of the business environment and the results obtained by others are not easily observable, firms perceive

the possibility to obtain economic benefits and to easily negotiate (and renegotiate) the agreement. At a first glance, one could argue that this configuration contradicts the basic idea of the framing perspective (i.e. organizations adopt innovations to simultaneously obtain economic and social benefits). We want to highlight that, according to our findings, the search for economic benefits does not automatically exclude the search for social ones. As figure 1 clearly shows, SB in configuration 1 is 'blank', meaning that it could be either present or absent in explaining adoption decisions of early adopters.

Configuration 2 constitutes a neutral permutation of causal conditions. In this configuration, the expected social benefits (i.e. increase in reputation and image) counterbalances the absence of results observability and institutionalization. However, these core conditions are not sufficient by themselves to explain early adoption. The perceived social benefits need to combine either with the perception to easily withdrawal from the contract or with an high perceived coherence.

Configuration 3 is also a neutral permutation. The core conditions are the presence of perceived compatibility, the absence of result observability and the absence of institutionalization. These core conditions are associated with the following peripheral ones: presence of expected economic benefits, presence of trialability and absence of negotiation difficulties. Interestingly, the possibility to withdrawal from the contract is a peripheral condition in both of the neutral permutations. Hence, even though the contract is perceived as highly compatible, adopters also consider the possibility to exit from the agreement. This possibility combines with the expectation to either reach economic benefits or to negotiate the agreement with ease.

Using the same graphical representation previously discussed, figure 2 shows the two neutral permutations leading to not-earliness of adoption. We can easily note that they are different from those explaining the presence of the outcome. In the first neutral permutation, the core conditions IST and ~CPL combine with the presence of expected social and economic benefits and the absence of difficulties in negotiating the agreement. In the second permutation these peripheral conditions are substituted by expected social benefits and by the simultaneous absence of result observability and trialability. These findings seem to suggest that the not-early adopters in our sample also adopt the contract as they increasingly see it as a stable part of the business environment.

However, these findings have to be interpreted with caution. As we have previously discussed, the use of the external benchmark has allowed to include only six empirically observed cases as not-early adopters. Hence, the number of logical reminders in the analysis of sufficiency for not-early adoption is very high. This fact has an influence on the overall results. First, we can note that expected social benefits, complexity and institutionalization are present in both of the neutral permutations. These are 'false necessary conditions' as the empirically observed cases cover only a

limited number of truth tables rows in which IST, SB and ~CPL simultaneously occur by chance. As suggested by Schneider and Wagemann (2012), false necessary conditions have to be treated as normal INUS conditions. Second, the logical minimization leads to a relatively low value of solution coverage, suggesting that the solution set covers only half of the set representing the outcome of interest. In other words, there are many other sufficient combinations of perceived attributes capable to explain a retard in the adoption of network contract. We are not saying that the configurations shown in figure 2 are un-correct or inconsistent (i.e. the value of consistency is high). These configurations are logically coherent and they synthesize the empirically observed cases. However, they represent the perceptions of only six adopters in an on-going process of diffusion. These considerations allow to highlight an important distinction existing between statistical techniques based on linear algebra and fsQCA. While in the former the objective is to obtain good values of model fit, in the latter 'good values' of consistency and coverage have always to be related to empirical evidence at hand.

Figure 2 - Configurations explaining not-earliness of adoption

	Configurations explaining not early adoption	
	1a	1b
Expected economic benefits	●	
Expected social benefits	●	●
Compatibility		
Complexity	⊗	⊗
Trailability		⊗
Observability of results		⊗
Institutionalization	●	●
Consistency	0,86	0,77
Raw Coverage	0,40	0,17
Unique Coverage	0,27	0,03
Overall Solution Consistency	0,85	
Overall Solution Coverage	0,50	

Source: own elaboration

To sum up, our findings highlight the ability of fsQCA to shed new light on the causal complexity underlying adoption decisions. Until now diffusion studies have used linear regression models to identify relevant perceived attributes capable to predict adoption decisions. In our research we are able to identify how these attributes combine, i.e. to identify several equifinal configurations formed by permutations of perceived attributes explaining adoption decisions for early adopters. These neutral permutations cannot emerge by using linear algebra. Specifically, in this study the equifinal configurations support the idea that early adopters of network contract desire to simultaneously obtain economic and social benefits. The absence of crossed out circles in all the causal paths suggest that expected social and economic benefits do not mutually exclude in early phases of diffusion. This is coherent with the framing perspective developed by Kennedy and Fiss (2009). However, the use of fsQCA also allows to extend our understanding on the causal complexity embedded in adoption decisions. First, the emergence of \sim IST and \sim OBS as necessary conditions is in line with our theoretical expectations as we are studying the early diffusion of a non familiar innovation. Second, the expected economic and social benefits are not sufficient by themselves to explain adoption as they need to combine with compatibility, complexity and trialability¹⁴⁵. This finding supports our idea that the framing perspective cannot be limited to the simple analysis of expected economic and social benefits. In other words, other causally relevant attributes play a role in explaining adoption decisions. Third, fsQCA allows to capture the multiple roles of causal conditions in explaining early adoption. In other words, the same causal condition can be core in one causal path and peripheral in others. For instance, in our study compatibility is a core condition in configuration 3, while in configuration 2b it becomes a peripheral one. These findings support the idea that these attributes do not always have the same relevance in adoption decisions.

By using fsQCA, we are also able to identify asymmetric causal relations. In our study, we have shown that different configurations explain earliness and non-earliness of adoption. Despite the relatively low number of cases involved in this latter analysis, it appears that industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto that adopted network contract after November 2012 perceive this new form of strategic alliance as a stable way to cooperate. However, we admit that this is still an early finding. This evidence could be confirmed or modified by extending the temporal boundary of our analysis after April 2013. This extension constitutes an exciting research direction for our study. Indeed, what clearly emerges is the absence of result

¹⁴⁵ Indeed, in two of the three configurations either EB or SB are core conditions. However, a core condition does not mean that the condition is necessary. As we have discussed in the previous chapter, a necessary condition must to be present to reach the outcome. By contrast, a core condition identifies a stronger causal relation with the outcome than a peripheral one in the analysis of sufficiency.

observability in a great number of configurations explaining both the presence and the absence of earliness of adoption. This evidence suggests that local change agents championing the diffusion of network contract need to increase their efforts to spread useful knowledge on the innovation. This will reduce the uncertainty surrounding adoption decisions and further stimulate the adoption of the contract.

7.8 Robustness of the analysis

In our discussion, it clearly emerges the considerable margins of discretion that researchers can exert while performing fsQCA. This fact could raise some doubts on the validity of our analysis. Similarly to statistics based on linear algebra, the results obtained using CCMs need to be tested to verify their robustness. In fsQCA, the analysis of robustness essentially focuses on those decisions "for which researchers usually possess enough discretion to warrants doubts about whether results would change substantively if (slightly) different, yet equally plausible decisions were taken" (Schneider and Wagemann, 2012: 285).

While the theoretical attention on result robustness in CCMs empirical applications (Marx, 2006; Schneider and Wagemann, 2012; Skaaning, 2011), we found that the vast majority of contributions do not consider these aspects. This lack of attention seems to emerge from a difficulty to formulate easily applicable statistical tests (Skaaning, 2011). Therefore, we separately evaluate the effects of changing calibration and consistency levels on our original solution formulas. In fsQCA a solution can be considered as robust if two conditions are meet: set-relational status of different solution formulas and differences in the parameters of fit (Schneider and Wagemann, 2012; Skaaning, 2011). In the former case, we run separate analysis to verify if a clear subset relation exists. In other words, solution formulas have to display similar necessary and sufficient conditions. In the latter case, solution consistency and coverage have to display no substantial differences in the values supporting alternative interpretations of the set relationships.

We want to highlight that, while evaluating the robustness of results, it is important to focus on the *combination* of the causal conditions rather on their neutral permutations. In other words, the analysis of robustness does not consider the changes in peripheral and core conditions. Therefore, we'll discuss robustness representing the causal paths using the Boolean expressions rather than the graphical representation previously used. In order to present a meaningful comparisons, we report here the Boolean expression for the intermediate solution of our original solution term (see table 5). This table will be the benchmark against with we'll verify to what extent the changes in calibration and consistency levels have an influence on the solution formula.

Table 5 - Configurations explaining earliness of adoption

Configuration number	Boolean Expression	Consistency	Raw Coverage	Unique Coverage
1	$\sim\text{ist}^*\sim\text{obs}^*\sim\text{cpl}^*\text{eb}$	0,88	0,47	0,03
2a	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{sb}$	0,89	0,61	0,05
2b	$\sim\text{ist}^*\sim\text{obs}^*\text{cmp}^*\text{sb}$	0,88	0,63	0,06
3a	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\sim\text{cpl}^*\text{cmp}$	0,87	0,44	0,03
3b	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{cmp}^*\text{eb}$	0,91	0,52	0,03
Overall Solution Consistency		0,88		
Overall Solution Coverage		0,82		

Source: own elaboration

7.8.1 Effects of changing calibration

The use of diverse thresholds can influence the assignation of a case to truth table rows, transform a consistent case into an inconsistent one (or vice-versa) and to turn an empirically observed truth table row into a logical reminder (or a logical reminder in an observed row).

We first analyze the effects of changing the calibration of those cases displaying a fuzzy value of 0.5. In the main analysis, we have decided to subtract the constant 0.001 to the fuzzy value of 0.5. This means that the case will be assigned to a truth table row in which the causal condition is absent rather than present. Now, we add the constant 0.001 to the fuzzy value of 0.5 in order to attribute the cases to the truth table row in which the condition is present. On this basis, we re-run the earliness of adoption taking all the other parameters equal.

As we can easily see from table 6, the resulting causal paths display minor changes if compared to configurations in table 5. The consistency and coverage parameters are essentially the same. This fact suggests that the decision on the crossover point does not affect the overall findings of our analysis.

Table 6 - Configurations explaining earliness of adoption (different calibration for fs-value=0.5)

Configuration number	Boolean Expression	Consistency	Raw Coverage	Unique Coverage
1	$\sim\text{ist}^*\sim\text{obs}^*\sim\text{cpl}^*\text{eb}$	0,88	0,47	0,02
2	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{sb}$	0,89	0,61	0,03
3	$\sim\text{ist}^*\sim\text{obs}^*\text{cmp}^*\text{sb}$	0,88	0,63	0,04
4	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\sim\text{cpl}^*\text{cmp}$	0,87	0,44	0,02
5	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{cmp}^*\text{eb}$	0,91	0,52	0,03
Overall Solution Consistency		0,89		
Overall Solution Coverage		0,82		

Source: own elaboration

We now change the thresholds used to calibrate the perceived attributes. In doing so, we change the qualitative anchors to include only those respondents that display a strong positive (or negative) attitude towards the construct. In other words, we are making the conditions to be included (or excluded) from the set more restrictive. Therefore, we assign full membership to responses of (7) in the scale and full non-membership to responses of (1). The results are shown in table 7.

Table 7 - Configurations explaining earliness of adoption (modified thresholds for perceived attributes)

Configuration number	Boolean Expression	Consistency	Raw Coverage	Unique Coverage
1	$\sim\text{ist}*\sim\text{cpl}$	0,84	0,60	0,07
2	$\sim\text{ist}*\text{tr}*\text{sb}$	0,90	0,64	0,03
3	$\sim\text{ist}*\text{cmp}*\text{sb}$	0,88	0,67	0,04
4	$\sim\text{ist}*\sim\text{obs}*\text{tr}*\text{cmp}*\text{eb}$	0,90	0,55	0,02
Overall Solution Consistency		0,88		
Overall Solution Coverage		0,84		

Source: own elaboration

From the comparison of the two solution formulas, it clearly emerges that $\sim\text{OBS}$ is no more a necessary conditions. This finding is not surprising as this causal condition was displaying a consistency value close to 0.9 in the original solution. Despite this fact, configurations one, two, three and four in table 7 are essentially identical to those displayed in table 5. Moreover, the values for consistency, coverage and raw coverage are essentially the same. The major concerns seem to emerge from the disappearance of the original causal path $\sim\text{IST}*\sim\text{OBS}*\text{TR}*\sim\text{CPL}*\text{CMP}$. However, we can note that this configuration is a subset of the solution $\sim\text{IST}*\sim\text{CPL}$. In simple terms, by increasing the area in which the respondents are 'more in than out' and 'more out than in' in each perceived attribute we obtained a less detailed solution formula. In conclusion, our changes in calibration have displayed no substantial changes in the causal condition included in the solution formulas, in their set relations and in the values of the parameters of fit. Therefore, the effects of recalibration seem to not undermine the robustness of our results.

7.8.2 Effects of changing consistency levels

We first increase the raw consistency threshold from 0.80 to 0.85. In doing so, the ESA will be performed on a lower number of truth table rows.

Table 8 - Configurations explaining earliness of adoption (raw consistency = 0.85)

Configuration number	Boolean Expression	Consistency	Raw Coverage	Unique Coverage
1	$\sim\text{ist}^*\sim\text{obs}^*\sim\text{tr}^*\sim\text{cpl}^*\text{eb}$	0,88	0,18	0,02
2	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\sim\text{cmp}^*\text{sb}$	0,91	0,17	0,02
3	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{cpl}^*\text{cmp}^*\text{eb}$	0,89	0,26	0,02
4	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\sim\text{cpl}^*\text{cmp}^*\sim\text{sb}^*\sim\text{eb}$	0,93	0,08	0,01
5	$\sim\text{ist}^*\sim\text{obs}^*\text{cmp}^*\text{sb}^*\text{eb}$	0,92	0,55	0,01
Overall Solution Consistency		0,91		
Overall Solution Coverage		0,76		

Source: own elaboration

As we can easily see from table 8, the configurations are slightly different from the original ones. For instance, the causal condition $\sim\text{TR}$ appears in the first configuration, while $\sim\text{CMP}$ appears in the second one. The value of solution consistency increases from 0.88 to 0.91, while the solution coverage reduces from 0.82 to 0.76. This is expected as an increase in the sufficiency threshold leads to an increase in the solution consistency and to a reduction in its coverage. However, the change in the threshold does not lead to the dramatic change in the parameters of fits signaling poor robustness of the results (Schneider and Wagemann, 2012: 292). We also re-run the analysis for the value of 0.75, i.e. the lower raw consistency benchmark for sufficiency. Therefore, we increase the number of truth table rows that will be included in the minimization algorithm. The results are reported in table 9. The only difference between table 9 and the original solution formula is the appearance of the configuration $\sim\text{IST}^*\sim\text{OBS}^*\sim\text{CPL}^*\text{SB}$. However, we can note that this latter configuration is very similar to configuration 2, i.e. the configuration that was appearing in our initial findings. Therefore, we can image that the lower threshold has included some truth table rows that allowed to differentiate between the two solutions. This is coherent with our original findings as in the configuration $\sim\text{IST}^*\sim\text{OBS}^*\sim\text{CPL}^*\text{EB}$ the causal condition SB is a 'blank condition', meaning that it can be either absent or present in the configuration in order to explain the outcome of interest. In conclusion, most of the consistency values, raw coverage and unique coverage are essentially identical to the original solution. Therefore, this latter formula can be considered as robust.

Table 9 - Configurations explaining earliness of adoption (raw consistency = 0.75)

Configuration number	Boolean Expression	Consistency	Raw Coverage	Unique Coverage
1	$\sim\text{ist}^*\sim\text{obs}^*\sim\text{cpl}^*\text{sb}$	0,85	0,51	0,01
2	$\sim\text{ist}^*\sim\text{obs}^*\sim\text{cpl}^*\text{eb}$	0,88	0,47	0,02
3	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{sb}$	0,89	0,61	0,03
4	$\sim\text{ist}^*\sim\text{obs}^*\text{cmp}^*\text{sb}$	0,88	0,63	0,04
5	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\sim\text{cpl}^*\text{cmp}$	0,87	0,44	0,02
6	$\sim\text{ist}^*\sim\text{obs}^*\text{tr}^*\text{cmp}^*\text{eb}$	0,91	0,52	0,02
Overall Solution Consistency		0,89		
Overall Solution Coverage		0,82		

Source: own elaboration

7.9 Conclusion

In this chapter we have applied fsQCA to study the early diffusion of network contract among industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto. Our findings support the basic intuition of the framing perspective as perceived economic and social benefits do not mutually exclude in early phases of diffusion. However, the use of fsQCA also allows us to provide some new theoretical insights to the adoption motivation debate. First, we have shown that several equifinal configurations can explain early adoption. These alternative causal paths allow to present a more fine-grained picture on adoption decisions. In our study, the analysis of these equifinal configurations support the idea that adoption of an innovation is characterized by causal complexity. Second, economic and social benefits are only part of the story in explaining adoption decisions. Due to the fact that they are INUS conditions in all configurations, they need to be combined with other attributes to explain early adoption of an innovation. Perceived compatibility, complexity, observability, trialability, observability of results and trialability have also a causal role in explaining adoption decisions. Third, these perceived attributes can be more or less causally relevant in explaining adoption decisions, i.e. they become peripheral and core causal conditions in different configurations. The core conditions emerging from our study are the absence of institutionalization, the absence of result observability, the presence of expected (social or economic) benefits and the presence of compatibility with past experiences and collaboration values. These conditions are surrounded by neutral permutations of other perceived attributes. Despite these findings, our results can still be improved by extending the temporal boundaries of our analysis. As we have discussed, network contract is still diffusing among Italian SMEs. Therefore, we can include more not-early adopters in our analysis to investigate if industrial firms in Friuli and in the eastern part of Veneto increasingly consider network contract as an institutionalized cooperation form.

CONCLUSIONS

The aim of this research is to try to refine the framing perspective in the adoption-motivation debate as developed by Kennedy and Fiss (2009). This perspective is highly innovative as it assumes that early and late adopters respectively frame adoption decisions as an opportunity or a threat. In particular, early adopters perceive the opportunity to achieve economic and social gains, while later ones desire to avoid the economic and social losses of being the non-adopters of a diffused (and institutionalized) practice. In this sense, economic and social motivations combine rather than mutually exclude. Despite the clear innovativeness of this perspective, we have highlighted several points that, in our view, should be further deepened. While Kennedy and Fiss (2009) only consider the expected social and economic benefits, we suggest to include other relevant attributes capable to explain adoption decisions: complexity, compatibility, trialability, result observability and institutionalization. Moreover, we suggest to distinguish between familiar and non-familiar innovations. While in the former case it is easy to find expected social benefits because the innovation is an already well-established and legitimated practice in other sectors of the society, in the latter social benefits emerge only when the innovation is diffused and perceived as valuable by both adopters and observers. The rapidity through which these social benefits emerge depends on how fast the non-familiar innovation is related to valuable reference points in the society. However, early adopters of such innovation can perceive the possibility to obtain social benefits in answering to social expectations or to suggestions of powerful social actors. Finally, causal complexity is naturally embedded in adoption, i.e. various combinations of perceived attributes can simultaneously explain adoption decisions within the same category of adopters. Therefore, we suggest to use Configurational Comparative Methods (CCMs) rather than statistical techniques based on linear algebra to identify several, mutually non-exclusive explanations of the decision to become an early or a late adopter.

In order to investigate how the perceived attributes combine to matter in adoption decisions of a non familiar innovation in its early stages of diffusion, we study the diffusion of network contract among industrial firms in Friuli Venezia Giulia and in the eastern part of Veneto until April 2013.

Our findings support the basic intuition of the framing perspective as perceived economic and social benefits do not mutually exclude in early phases of diffusion. The absence of crossed out circles in all the configurations suggest that social and economic benefits are complements rather than substitutes. In our research, social benefits refer to perceived improvements in adopters' reputation, image and attractiveness for future cooperations arising from the adoption of network contract. In this sense, entrepreneurs answer to powerful social expectations according to which Italian firms

have to cooperate to overcome the traditional limits of small dimension and to signal to external stakeholders that they are embedded in a network of relations with other firms.

However, the use of fsQCA allows us to provide some new theoretical insights to the adoption-motivation debate. First, we have shown that several equifinal configurations can explain early adoption. In other words, it is not necessarily true that a single combination of attributes is the best explanation for adoption. In our research, it clearly emerges that some adopters of the network contract are attracted by the possibility to obtain economic benefits and the perception to easily negotiate and re-negotiate the agreement. Others are much more interested in the possibility to obtain social benefits and either a perceived compatibility with past collaboration experiences or the possibility to withdrawal from the contract. Finally, another group of firms perceive the contract as compatible and easy to withdrawal. These considerations allow to present a more fine-grained analysis on why early adopters frame the decision to stipulate network contract as an opportunity.

Second, the expected economic and social benefits are not sufficient by themselves to explain adoption. Due to the fact that they are INUS conditions in all configurations, they need to be combined with other attributes to explain early adoption of an innovation. Perceived compatibility, complexity, observability, trialability and institutionalization have also a causal role in explaining adoption decisions. This finding supports our idea that the framing perspective cannot be limited to the simple analysis of expected benefits, as other causally relevant attributes play a role in explaining adoption decisions. Moreover, the absence of result observability and institutionalization in all the configurations (i.e. necessary conditions) are coherent with our expectations on the early diffusion of a non-familiar innovation.

Third, perceived attributes can be more or less causally relevant in explaining adoption decisions, i.e. they become peripheral and core causal conditions in different configurations. This allow to shed light on the existence of neutral permutations of perceived attributes suggesting that causal conditions interact differently when combined with other attributes.

The current study also has several limitations. As we have previously discussed, we have focused on a still on-going diffusion process on a relatively limited geographical area. Due to the use of the theoretical sampling, our results cannot be generalized to all adopters of network contract. Moreover, diffusion of innovation theory suggests that the relative importance of perceived attributes in explaining adoption decisions change over time. Finally, the use of an external benchmark to calibrate earliness of adoption has allowed us to empirically observe a relatively low number of firms that are not-early adopters. Therefore, our findings that adopters of network contract in the period November 2012 - April 2013 perceive this new form of strategic alliance as an institutionalized form of cooperation have to be interpreted with caution.

However these limitations give the opportunity to extend this research to new exciting directions. First, we can image to extend the temporal boundaries of our analysis after April 2013. By including more empirically observed cases in our analysis, we'll be able to confirm the idea that network contract is increasingly perceived a stable and resilient way to cooperate among industrial firms in Friuli and in the eastern part of Veneto. If confirmed, the further spreading of network contract will be facilitated as potential adopters are more incline to adopt a strategic alliance perceived as 'normal' in business relations. Second, we can extend our research to a representative sample of adopters covering the entire Italian territory. As we have discussed, fsQCA and sampling techniques used in linear algebra are not incompatible. This research development will give another point of view and a more broader picture on why network contract is being adopted by Italian firms. Third, we can apply the idea to use CCMs to shed new light on causal complexity in adoption decisions to a concluded diffusion process. Therefore, we'll able to investigate both the perceptions of early and late adopters, fully exploring the potentialities of causal asymmetry to shed light on adoption decisions. Fourth, it'll also be interesting to identify those configurations explaining the non-adoption of an innovation. To our knowledge, the framing perspective has never investigated innovations that failed to diffuse (or are failing to diffuse). Fifth, following Rogers' framework we can include other causal conditions capable to explain adoption. For instance, we can image to create a causal conditions measuring the proximity to change agents or the characteristics of the adopters (e.g. firm size). The main insight is that the perceptions driving adoption for a micro or small firm is probably different from a medium sized-one.

Finally, we'll conclude suggesting some policy implication for change agents as, to our knowledge, this is also the first time that the perceived attributes of network contract are assessed. As our results suggest, adopters in the industrial sector in Friuli Venezia Giulia and in the eastern part of Veneto find difficult to acquire knowledge on the results obtained by previous adopters. This is a crucial point as local change agents championing the adoption of the contract need to further increase their efforts to spread useful knowledge on network contract. Diffusion theory claims that the continue exposure to sources of information (e.g. conferences, reports, newspaper articles) stimulates the development of a positive attitude towards the innovation. Moreover, change agents have not to underestimate the possibility to trigger diffusion using interpersonal channels of communication. In particular, entrepreneurs and managers that have already stipulated the contract can share they experiences with non-adopter peers to increase their positive attitude towards the adoption of network contract. Finally, change agents can also issue financial incentives to new adopters of network contract. These efforts will increase the likelihood that the diffusion of network contract

will become a self-sustaining process, leading to the successful spreading of this new form of strategic alliance.

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Methodology

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