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Exploring the organizational responses to reforms in the Italian industrial sector

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1 Introduction

The serious crisis of 2008, fueled by the financial and real estate bubble originated in US and propagated with strength to the area of the main industrialized countries, questioned the role of the state in recovering the real economy, the enterprises, and the society in general. The crisis manifested in Europe with a double recession (2008-2009 and 2012-2013) had an impact on Italian economy particularly relevant, amplified by the presence of some critical issue still unresolved and a series of factors of structural weakness of Italian production system.

After the serious effects of the crisis, a new industrial policy, both in Italy and in the European context, is needed. It should favor the evolution of the economy towards directions deemed desirable from the economic (improving efficiency), social (reducing poverty and inequality), environmental (ensuring sustainability) and political (protecting particular national interests) point of view. From an economic point of view, public authority can obtain improvements of static efficiency, intervening in cases of market failures, and dynamic efficiency, increasing the resources available, promoting the growth of sectors with strong learning processes, encouraging structural change towards sectors with higher productivity; public policies can also play a fundamental role in planning and coordinating investments, skills and networks between companies and institutions; finally, industrial policies are necessary to provide contextual conditions like education, knowledge, infrastructures, raw materials that are essential for the development of new sectors.

Moreover, companies around the world are facing challenges due to the rapid changes that have spread around the world in recent years. Most of these changes originate in technological development. In response to these changes, the need for public intervention has been asked both to regulate some of these phenomena and to direct and support the private sector in the adoption and implementation of new technologies (Mazzucato et al., 2015). Many central governments have promulgated reforms to improve the competitiveness and efficiency of their companies. It's each country's interest to create an environment that is favorable to business.

1.1 Problem statement

The context of this research is the Italian industrial sector. In Italy the governance of the industrial sector has been poor for many years but recently industrial policy came back on top of the

Government's agenda. The “Industria 4.0” National Plan represents an opportunity for all companies that are ready to take advantage of the unprecedented incentives offered by the “Fourth industrial revolution”. The Plan provides for a wide array of consistent and complementary measures promoting investment in innovation and competitiveness - all measures that have proved their effectiveness in the past have been strengthened under a “4.0” logic, and new measures have been introduced to meet new needs. This is how the government have embraced a new paradigm of policy-making: “We have planned measures that every company can put in place automatically – thus avoiding any evaluation procedures - and, above all, without any restrictions in terms of size, sector or location.” (www.sviluppoeconomico.gov.it). Said the ministry of the Economic development. As demonstrated by the considerable financial resources that have been committed to the plan in the coming years, the Government is offering enterprises that want to grow a valuable opportunity. The “Industria 4.0” National Plan will affect every step of the life cycle of companies by supporting investments, the digitalisation of industrial processes, improvement in workers productivity, as well as the development of new skills, new products and new processes.

“The success of the “Industria 4.0” National Plan depends on the extent to which entrepreneurs take advantage of the measures that have been put in place.” (www.sviluppoeconomico.gov.it). The ministry of Economic development said.

The problem statement is in fact to indagate in which extent the reform is going to be accepted by the business sector. The focus of this study will be to investigate the responses of companies to the government's initiative in order to address the factors that contributes to success and the criticalities of the reform. In investigating this issue, I will consider all the stakeholders involved. In fact, due to the delicate issues that were at stake, all the interested parties were involved in the reform agenda, and among these are included in addition to the central government and the various local branches of the government, the chambers of commerce, business associations such as Confindustria, unions, professional association and the banking circuit.

1.2 Goals of the research

In order to study such a complex system an important role can be played by changes in organizational structure at field and organizational level, including mechanisms that influence the relationships between the various actors and the way these actors interact.

In particular we will investigate how the companies that shows interest to the "Industry 4.0" have changed their organization and on what extent Management Control System has prevented or facilitated the actions to align their own strategies with the ambitions of the reform. In investigating

this issue, an important role can be played by changes in organizational structure and practices, including mechanisms that influence the relationships between the various actors and the way these actors interact.

The goal of this research is to explore the change in organizational structure due to the dynamics between the pressures and the strategic responses. This research, starting from the seminal work of DiMaggio and Powell (1983), is aimed at further developing the framework of Oliver (1991) which predicts the level of individual response to pressure from a number of institutional factors. Through detailed analysis we will attempt to discover possible relations between pressures and responses and how management control system influences such relations.

1.3 Relevance of the research

The relevance of this research is to provide new perspectives to institutional theory via case studies. The main objective is to understand how companies reacts to institutional logics promoted by dominant institutions in order to produce change. The marginal objective is to contribute to discover the interactions between actors in a organizational field context promoted by institutional pressures.

1.4 Research Questions

This research addresses to interrelated questions:

Q1 'How were reform ambitions translated into companies goals, means and strategies?'

Q2 'How Italian companies use Management control systems to make their responses aligned with the reform ambitions?'

In order to provide an answer to the main research question, various sub-research questions have been formulated. The sub-research questions are formulated in order to address the main research question and are stated below.

1. Which Institutional Pressures do the companies face?

2. What are the response of the firms to the Institutional pressures?

3. What goals, objectives and approaches the companies use to align their strategy to the ambition's reform?

In order to address the main research questions, the sub research questions will be studied and investigated at the same time.

2 Literature

Institutionalism finds its origin within the 19th century but faced various and substantial changes over the time. The first statements regarding institutionalism stems from prominent scholars, such as; Marx, Weber, Durkheim, and many others. Weber argues that rational order has become an "iron cage" in which humanity has been locked and which, due to the power and efficiency of bureaucracy (rationalism more extreme form), was completely irreversible.

However DiMaggio and Powell argue that is possible to revisit the metaphor of the "iron cage" because, perhaps building on the work of Meyer and Rowan (1977), we can see that bureaucracy is continuing to grow and organizations are becoming increasingly homogeneous, but the processes that are driving this are (unlike in Weber's model), "making organizations more similar without necessarily making them more efficient" (DiMaggio and Powell 1983).

A shared understanding stemming from the early institutionalism is that organizations are not independent but operate in the context of institutional arrangements and social processes. According to Di Maggio & Powell (1983), in the early institutionalism: "issues of influence, coalitions and competing values were central, along with power and informal structures". The old institutionalism focuses on internal dynamics attaining the individual organizations. The origin of organizational theory stimulated the development of institutional theory and resulted in a paradigm shift.

The new institutionalism shows an important linkage between the institutional environment and organizational behaviour (March, 1965). The early institutionalism differs from the new institutionalism, via its "emphasis on legitimacy, the embeddedness of organizational fields, and the centrality of classification, routines, scripts, and schema" (Greenwood & Hinings, 1996). In the new institutionalism, originated between 1970 and 1980, scholars emphasized cognitive structures. Scholars highlight the importance of compliance to the external institutional environment for organizational survival. They note that compliance to the institutional environment provides organizations with benefits such as; legitimacy, status improvement, an increase of internal and external loyalty, entrance to resources, stability, community and society support, acceptance and security. It must be noted, that these benefits as a result of organizational behaviour do not

necessarily increase an organization's effectiveness (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Oliver, 1991). The new institutional theory focus in opposition to the old institutional theory on the external environment attaining the organizational field/society.

Neo institutional theory is one of the most dominant perspectives in organizational theory. The uniqueness of this perspective is rooted in its emphasis on the primacy of culture, highlighting how social structures of resources and meanings are created and have important consequences.

There was a break from the classical isomorphism as naïve urgency of assimilating to other entities toward an institutional approach to rationality that imply the role of intelligent performance-oriented managers implying the concept of agency in the relations between this actor micro process and institutions.

This kind of institutional approach to rationality has more recently become manifest in the use of the concept of institutional logics that refers to broader cultural beliefs and rules that structure cognition and guide decision-making in a field. The emergence of the concept of logic has been a key turning point in redirecting attention back to the kind of institutional rationality suggested by Meyer and Rowan (1977) as well as the study of institutional sources of practice variation.

Institutional logics can be understood as:

[...] the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality (Thornton and Ocasio, 1999, p. 804).

The main purpose of the Neo institutionalist is to show how variation in extant practice makes possible the creation of something distinctly different – for example, a new practice. This requires social recognition that variation in the enactment of practice is substantively different enough to warrant attention as a deviation from established practice. This often entails some sort of collective action by actors who see a potential to benefit from such deviation in the form of a new socially legitimated practice. Such collective action needs to mobilize resources and meaning in support of the new activity and then theorize this activity in a way that will be acceptable to incumbents in an established field (Burns and Scapens 2000).

Neo institutional theory provides Convergence of the elements of the old- and new-institutional theory. Neo Institutional Theory in fact, can provide model of change linking organizational context and intra-organizational dynamics.

Since our purpose is to study the effect of the reforms and the responses to that reforms the theoretical background that better fit in my research is the Neo institutional theory in the light of institutional change. Institutional change could be defined as a difference over time in an institution. The relevance of the contribution of the work of Greenwood and Hinings is to understand the transition from reforms as promoters of organizational change at the field level. Firstly, they articulate the circumstances in which a convergent organizational change is to be expected or radical (Greenwood and Hinings, 1996). Secondly, they adopt a broad perspective on institutional theory that brings together traditional issues of power, competing values and coalitions with new issues of legitimacy and inclusion of the organizational sectors (Greenwood and Hinings, 1996) this is fully adapted to a complex context in which there are many actors interacting with each other and with the organization and where there is a high degree of uncertainty.

2.1 Theoretical reference framework

The starting point of this research in respect of the theoretical background is the masterpiece of P. J. DiMaggio & W. Powell, "The iron cage revisited" institutional isomorphism and collective rationality in organizational fields"1983, that introduce the Institutional Theory. The institutional theory describes institutions as social structures. Institutions are identified to be legal authorities, judicial authorities, administrative agencies, governments, regulators and organizations which can enforce behaviour, competitors, more legitimated organizations, professions, educational systems, interest groups, public opinion and society (Scott, 1995:2001; Meyer & Rowan, 1977; DiMaggio & Powell, 1983).

The work of DiMaggio & Powell (1983) form the foundation of the New Institutional Theory. The masterpiece found that organizations comply with the pressures exerted by the institutions. Important institutional rules and regulations, procedures and processes act as rationalized myths. These rationalized myths are sought to be included in an organization in order to gain legitimacy, gain knowledge, become more balanced and increase the chances of survival. The fact that companies conform to these rationalized myths is identified as isomorphism. Isomorphism in the institutional environment has the consequence that organizations align their structure in order to gain legitimacy rather than organizational efficiency (Meyer and Rowan, 1977). DiMaggio &

Powell (1983) describe the concept of isomorphism and study organizations becoming more similar to each other.

In the institutional theory, a lot of attention has been putted on how institutional pressures cause the isomorphism among the organizations in an organizational field. Within the neo-institutionalism there is a heavy emphasis on organisations conforming to the demands of the institutional environment (Meyer and Rowan, 1977; Zucker, 1991; DiMaggio and Powell, 1983). Nevertheless, the adherence to the institutional pressures toward the isomorphism is not only a matter of interpretation and to choose the organizational point that is desirable given the internal constraints, it is also a function of the strength of the pressure that can be practiced by external actors as courts, antitrust organisms, analysts and shareholders.

Meyer & Rowan (1977), DiMaggio & Powell (1983) and Scott (1995) have studied the institutional pressures that cause isomorphism. Within their work, different types of institutional pressures have emerged. Institutional pressures are identified to be: regulative pressure, normative pressure, mimetic pressure.

Mimetic pressures

Mimetic pressure is related to how answer to the uncertainty. The organizations imitate the other organizations that are successful, or the others in order to be "at least not worst than other organizations "on the field, which results in a positive judgment of the market.

Organisations have an inclination to model themselves on other organisations within their environment in which they deem to be successful and legitimate. This isomorphic inclination is identified as a result of mimetic pressures. DiMaggio and Powell (1983) determine that mimetic isomorphism is a result of uncertain environments and unclear organisational objectives.

Coercive pressures

Coercive pressures: "the formal pressure and external pressure exerted on companies by other organizations from which they are dependent, and the cultural expectations in the society within which the organizations function" (DiMaggio & Powell, 1983). Coercive pressure as the resultant product from rules and formal rules that can be inspected and sanctioned, with the most probable source of pressure that is government, corporate body and other subjects like powerful stakeholders from which the organization is dependent.

Normative pressures

The final pressure identified by DiMaggio and Powell (1983) as causing isomorphism is normative pressure. Normative pressures are resultant from the norms and from the values of how the things should be done. This can be taken for granted but it will become aware when the values are violated. Professionals and experts develop an important role to establish these norms as the progress of the knowledge (technological) and the experience determines the state of the art in a certain field. These norms are diffused through for instance experts and professional organizations and can be formalized in norms and standards.

Normative pressures are present as a consequence of professionalism within certain organisational fields. DiMaggio and Powell (1983) define professionalism as being interpreted by members within a particular occupation collectively defining the appropriate ways in which to act.

The research moves forward by discussing the institutional pressures rearranged; in particular I split normative pressure in social normative pressure and professional normative pressure; this concept are both relevant for the research purpose. Then I explore whether the companies most likely to conform or resist (Di Maggio 1998; Scott 1995) to the institutional pressures. As the organizations seek the legitimacy, together with the economic competitiveness, leading them to respond external pressures in their field. This bring to adopt norms and similar values and practices. To maintain the legitimacy, the organizations seek an adaptation in their field; they want to satisfy the institutional demand, that is the level of the performances showed by the competitors that performed well or that are perceived to be successful and by the standards formalized in the field. Organizations usually perceive conformity to institutional pressures as beneficial. Anyway, instead of complying blindly with institutional pressures, researchers suggest that organizations might strategically choose to comply with or resist institutional pressures (Oliver, 1991; DiMaggio, 1988). In her work, Oliver (1991) observes that institutional isomorphism highlights the institutional environment. Oliver note that organizations respond to organizational interest. The author proposes various strategic organizational responses to institutional processes. These strategic responses can vary based on the internal and external context and the strength of the interaction forces that operates between them. There is also the possibility that the organization is not likely to conform (Oliver 1991).

Oliver (1991) describes the range of the strategic responses as a function of the ability and willingness of the organizations to be aligned with the pressure. To frame the range of response, organizations can choose to react to the external pressures by utilizing five categories of strategic responses that goes from the low resistance to the high resistance. Strategic organizational

responses are established as; acquiesce, compromise, avoid, defy and manipulate (Oliver, 1991). with the organization and where there is a high degree of uncertainty.

2.1 Institutional pressures rearranged

In this section a clear distinction will be introduced among all the different points of view on the institutional pressures. A certain overlap exists among the different categorization or descriptions furnished by the authors in the literature. Insofar it is important that a clear classification of the different pressures is made. These categories will be used for measuring the pressures exerted by the reform on the organizations for this research purpose. The categories that we are going to use in this research are: regulative pressure, mimetic pressure, social normative pressure, professional normative pressure.

Regulative Pressure

The regulative pressure refers to rules and laws and is diffused through documents writings and legislation. It is legitimated by the institutionalization of the source.

According to Meyer and Rowan (1977) "the rationalized myths" can be sustained by the strength of the law. They declare that a lot of the positions, politics, programs and procedures of the organizations are partly applied by the laws. The rationalized myths can have a routed legitimacy, for instance, on the public opinion and many of these myths also have an official legitimacy founded on legal orders. The legislative and judicial authorities create and interpret these juridical orders. The administrative agencies as governments establish rules of behavior. Accordingly licences and credentials are needed to practice in the domain. Because of the regulative pressure for the organizations become necessary or advantageous to conform to the law.

DiMaggio and Powell (1983) use the term coercive isomorphism to refer to the regulative pressure. The coercive isomorphism drift partly from formal and informal pressures practiced on the organizations from other organizations by which they depend and from the cultural expectations in the society in which operate the organizations. The first part of this definition refers to the regulative pressure; the second part refers more to the social normative pressure, that will be treated more ahead in this section. The other organizations on which the focal organization can be dependent of, according to DiMaggio and Powell (1983), are governments or other regulators or other organizations that can oblige to respect the behaviours.

Scott (1995) affirms that the regulative process implicates the ability to establish rules and laws, to inspect the conformity to them and, if necessary, to impose sanctions in the attempt to influence the

future behaviour. The governments are more likely to be candidates to furnish coercive pressures to the organizations. The organizations conform themselves to the regulative pressure because of convenience and because doing so they gain legitimacy legally sanctioned.

Mimetic pressure

The mimetic pressure originates from the impulse for the organizations to imitate the behaviour of other successfully organizations with the purpose to reduce the uncertainty and the anxiety. The mimetic pressure is diffused through the public show off of practices as the annual report and the performance ranking.

Meyer and Rowan (1977) affirm that "when there is uncertainty, the organizations imitate other organizations that are perceived successful and / or similar". DiMaggio and Powell (1983) refer to the mimetic pressure as to a mimetic isomorphism. Besides they sustain that it is the attempt to answer to the uncertainty making organizations more similar. When technologies are uncertain in the adoption and use (March and Olsen 1976), the objectives are ambiguous, the environment is fast changing, or a path of clear behaviour is not available, the organizations tend to adopt similar practices of successful and legitimate organizations. The firms adopt these practices to increase legitimacy, showing that they try to improve. The mimetic pressure is, according to DiMaggio and Powell (1983), larger when the number of people or served clients is big.

Scott (1995) deals with the mimetic pressure in what it defines the cognitive pillar. In this thesis the cognitive pillar won't be used as a pressure, because in the opinion of the author the cognitive pillar contains mimetic and normative aspects and is divided among mimetic and normative pressures.

Scott (1995) affirms that as result of the systems of beliefs and the cultural structures imposed to the organizations, the organizations will try to behave in conventional ways without distinguishing.

Besides, all the actors have a certain status and the organizations tend to imitate those that perceive as superior or of great success.

Normative pressure

Normative pressure originates from the necessity to stick to norms, values, duties, responsibility and expectations of role that reside in the society in its whole. In this thesis we decided to make a distinction among social normative pressure and professional normative pressure. The social normative pressure refers to the pressures coming from the whole society or from the public opinion, while the professional normative pressure refers to the pressures coming from professional

actors in the institutional environment as the professions or academics or association of professionals like professional bodies.

Social normative pressure

Meyer and Rowan (1977) state institutionalization involves the process through which the social trials, the obligations or the realities come to take a rule like status in social environment. In such way what the authors call “rationalized myths” come to action. These rules can simply be taken for granted or can be sustained from the public opinion or from the enforcement of law. Meyer and Rowan add that a lot of positions, politics, programs and procedures of the modern organizations are partly strengthened by the public opinion and by the social prestige. Meyer and Rowan affirm that the relational networks can act as vehicle of diffusion for these “rationalized normative myths”. The coercive isomorphism of DiMaggio and Powell (1983) refers both to the regulative pressures and to the social normative pressure. They sustain that the coercive isomorphism is the result of pressures both formal and informal coming from other organizations on which an organization is dependent, as the governments, that it means regulative pressures, and from cultural and social expectations, that it means normative social pressure. The normative isomorphism of DiMaggio and Powell refers more to the professional normative pressure and will be included in the following paragraph. In the normative pillar of Scott (1995), he refers to normative rules that introduce a prescriptive, valuative and obligatory dimension in social life. He sustains that normative rules define the objectives and goals; they furnish an indication on how to pursue goals and objectives and that the normative rules can limit or strengthen the organization because they confer rights and responsibility. The organizations conform itself to the normative rules because they feel morally obliged to do so. The cognitive pillar of Scott also contains elements of social normative pressure. The rules socially structured are of great importance in modelling the social behaviour of an organization. Scott argues that rules are largely taken for granted and that social behaviour is for a great part based on orthodoxy or “the way we do things”. The cognitive rules determine the way we see our world, how we attribute meaning on things and the way according to which we give a sense to the things. These rules reside in large systems of beliefs and cultural structures, that find their origins in the society as a whole. Insofar the author interprets the cognitive pillar as part of the social normative pressure.

Professional normative pressure

Meyer and Rowan (1977) affirm that a lot of the positions, politics, programs and procedures of the modern organizations are applied by the public opinion, from the opinions of important constituent, from the knowledge legitimated through the educational system, from the social prestige, from the laws and the judgements used by the courts. The application from the educational system refer to the professional normative pressure. Similar courses of formation in the professions socialize the members in similar visions of the world that results in a more likely homogenization to happen.

They describe the isomorphism that derives from the professionalization, as the collective struggle of the members of an occupation for defining the conditions and the methods of their job and to establish legitimation for their occupational autonomy. The professions regulate the norms inside a field with the purpose to establish a normative control. The professions are defined as occupational groups that have reached a high degree of control with their own field of job by shaping the organizational frame and the rules that regulate this field. Also, the members of the professions interact through professional networks and trade associations, through ideas and models that were spread. Like social normative pressure relational networks serve as a vehicle for diffusion. For organizations it is necessary or advantageous to incorporate new structures because of the law, the educational and credentialing systems and public opinion.

Although the author interprets the regulative pillar of Scott (1995) as mainly being part of the social normative pressure, it can also be seen in the light of the professional normative pressure, since the professional normative systems also have norms and values. Moreover, the professional normative rules bind and give power, it also confers rights and responsibility.

Pressure	Regulative	Mimetic	Professional normative	Social normative
Description	Rules, regulations, laws	Imitation of others	Professional standards, understandings and expectations	Public opinion and expectations, Rationalized myths, Socially constructed rules, Collective understandings
Source	Legislative and judicial authorities, Administrative agencies (M&R), Governments(M&R; D&P; Scott) Regulators, Organizations that can enforce behavior (D&P)	More successful organizations (M&R; D&P; Scott), Similar organizations (M&R), More legitimate organizations (D&P)	Professions (D&P), Educational system (M&R)	Public opinion (M&R), Social prestige (M&R), Society (D&P; Scott)
Vehicle for diffusion	Written documents, Legislation (M&R, 1977; D&P, 1983;	Public outings such as annual reports,	Education (M&R), Relational networks (M&R), Professional	Relational networks (M&R), Cultural and societal expectations

	Scott, 1995), Rules of practice (M&R),	Performance rankings	networks (D&P), Trade associations (D&P)	(D&P), Belief systems and cultural frames (Scott)
Basis for compliance	Licenses and credentials (M&R), Legal enforcement (D&P), Legal sanction (Scott)	Avoid uncertainty (M&R; D&P), Maintain stability (M&R), Increase legitimacy (D&P), Not standing out (Scott)	Public opinion (M&R), Social obligation (Scott), Moral obligation (Scott), Taken for granted (Scott)	Public opinion (M&R), Social obligation (Scott), Moral obligation (Scott), Taken- for- granted (Scott)

2.2 Room for agency

The theory and the research on the institutionalization have produced precious information on the process that define and explain the institutionalization in the organizational environments and their influence on the organizational conformity to the environment. The first versions of the institutional theory put a particular emphasis on the taken for granted character of the rules, of the myths and of the institutional beliefs as shared social reality and on the processes by which the organizations have the tendency to become instilled of value and social meaning (Oliver 1991). More recent treatments of institutionalization have elaborated the nature and the variety of these institutional processes (DiMaggio & Powell, 1983; Meyer & Rowan, 1977) and the range of influences that these processes exert on the structural characteristics of the organizations (Oliver 1991) providing foundation to organizational change.

During the 80's, the institutional theory was mainly finalized to explain the organizational homogeneity observed inside the organizational fields (DiMaggio & Powell, 1983). In this way the institutional theory has contributed to the studies of the organization underlining the importance of the environment in which the organizations are located and explaining the isomorphism among organizations that is influenced by the same institutional pressures. Nevertheless, the institutional theory has been criticized for founding on a vision of the action excessively socialized towards homogenization, without paying enough attention to the institutional change. A certain number of theorists has sustained that the emphasis on the conformity has brought to an underestimation of the role of interest and agency in the adaptation to the institutional environment (DiMaggio, 1988), while it is exactly being interest and agency that can cause institutional change. Oliver (1991) has reassumed these criticisms, observing: "The institutional theorists, by virtue of their focus, they had the tendency to limit their attention to the effects of the institutional environment on the structural conformity and the isomorphism; they tended to overlook the role of agency and of the resistance in the relationships organization-environment " (Oliver 1991, p.195).

The authors' works treated the possibility of change, although is not the principal objective.

In a Weberian extension of institutionalization processes three levels of analysis emerged. The three levels concern to levels of socio-historical relations: a macro level (society taken as a whole), a meso level (the organizational field) and a micro level (the organization). Each level recursively influences the others.

Meyer and Rowan (1977) affirm that the organizations often conform to the institutional context, but they can also actively model the contexts. The organizations can cooperate with the authorities and can succeed in institutionalizing their objectives and their structures in the rules of the authorities (Meyer and Rowan 1977). Doing so they actively push their internal change in order to obtain an organizational change that can spread at the field level.

The organizations can model their institutional environments in two ways. First of all, the powerful players can force their structures on their immediate relational network and beyond by indirect influence. Second, the powerful players can try to build their objectives and their procedures in the society as institutional rules. DiMaggio and Powell (1983) hypothesize that a certain number of organizational and field level predictors can influence the degree of homogeneity in organizational circle. This means that the institutional pressure toward the homogeneity could vary from field to field. Then not all the actors are equally forced to stick to the external pressures, which means that there can be space for agency. To organizational level, they hypothesize that the dependence from other organizations and the centralization of the provisioning of resources will bring coercive isomorphic change. The uncertain relationships between means and ends and ambiguous objectives will bring the organizations to model towards the successful organizations, in other words the isomorphic mimetic change. Moreover, reliance on the academic credentials in hiring the personnel and in the participation of the managers in trade association and in the professional associations should finally, bring to normative isomorphic changes. To the level of field, it is hypothesized that the institutional isomorphism is positively correlated to the dependence of a field from a single source of support for vital resources, like transactions with government agencies, limited alternatives for organizational models, uncertain technologies, ambiguous goals, professionalization and structuration. Scott has affirmed: "As in the case of their technical environment at organizational level, organizations are expected to exercise "strategic choice" in relationship to their institutional environments and responding to the institutional pressures" (Oliver 1991: p. 170). According to Oliver (1991), missing from the institutional literature was an explicit attention to the strategic behaviours that organizations employ in direct responses to the institutional process that cope with them. Later, the institutional theorists have thought that the choice of the conformity or resistance to the institutional pressures is a strategic choice influenced by the organizational

interests (Powell, 1991); conformity allows them to enhance technical concerns, such as efficiency or the acquisition of resources (Powell, 1991).

To support strategic choice instead of blind conformism, DiMaggio (1988) introduced the idea of the institutional entrepreneurship, by which the organizations unfold the resources available to them to create and to strengthen the institutions. These agents have the resources and therefore the power to model the character of the institutions and make the institutional change happen. Later Battilana, Leca and Boxenbaum (2009) have formulated the following definition of institutional entrepreneurs: “change agents who initiate divergent changes, that is, changes that break the institutional status quo in a field of activity and thereby possibly contribute to transforming existing institutions or creating new ones.” (Battilana, Leca and Boxenbaum 2009: p.67). Institutional entrepreneurship can be organizations or groups of organizations or individuals or groups of individuals. "Institutional entrepreneurship tries to explain how the actors can contribute to the change of the institutions despite the pressures toward a status quo." (Battilana, Leca and Boxenbaum 2009: p.67)".

The following literature, written after the job of DiMaggio on the institutional entrepreneurship has tried to face the criticism to emphasize the conformity, recognizing both the variation and the change. This variety is the result of external sources and of perceptions, interpretations and executions of *institutional logics* from the actors.

Further, either conformity or resistance to institutional pressures is likely to reflect both institutional and technical concerns. Organizations do not necessarily blindly conform to institutional pressures but rather, may actively assess the extent to which conformity allows them to enhance technical concerns, such as efficiency or the acquisition of resources (Powell, 1991; Scott 1991).

This means that at least some members of the organization are active vectors of institutions. In other words, the actors are not just passive. They make choices and they model their actions on their perceptions and interpretations of the institutions (Dacin, Goodstein and Scott 2002).

Perhaps one of the most influential jobs to support the perspective of strategic choice is the article of 1991 of Oliver. In line with the aforesaid criticism, she affirms: "That the institutional theory can accommodate an active organizational behaviour to pursue self-interest when the responses of the organizations to the institutional pressures and the expectations are not considered passive and conforming to all the institutional conditions." (Oliver 1991: p. 1).

2.3 *Conditions for change*

Although the principal attention in the jobs of Meyer and Rowan (1977), DiMaggio and Powell (1983), Scott (1995) is conforming to the institutional pressures, all the mentioned authors have faced in some extent, the possibility of an institutional change. More and more theoretical views begun to recognize that there can be space for an organization to make a strategic choice rather than to blindly conform to the institutional pressures. The conditions for the change or the agency can substantially be divided in field level characteristics and organization level characteristics.

Organization level conditions

Meyer and Rowan (1977) they affirm that the organizations can model their institutional environment in two ways. First, the powerful players can force their logics and structures in their immediate relational network. Second, the powerful players can try to build their objectives and their procedures in the society as institutional rules. Then it is obvious that powerfulness can facilitate the ability of an organization to influence the institutional environment.

DiMaggio and Powell (1983) they hypothesize that on organizational level, the dependence from other organizations and the centralization of the provisioning of resources will bring coercive isomorphic changes. This means that the smaller the dependence and the centrality of the resources, the great is the space for the agency. The uncertain relationships between means and ends and ambiguous objectives are hypothesized for driving the organizations to model on successful organizations, in other words causing the mimetic isomorphic change. Finally reliance on academic credentials in choosing personnel and participation of managers in trade and professional associations are supposed to lead to normative isomorphic change.

Battilana, Leca and Boxenbaum (2009) identify some favourable conditions that facilitate the institutional entrepreneurship. They resolve the paradox of an embedded agency, which refers to the question of how organizations or individuals whose beliefs and actions are determined by existing institutions can break with these very same institutions and innovate. At organizational level, they sustain that the social position of an actor can facilitate the institutional entrepreneurship. The social position of an actor influences its perception of the conditions of the field and its ability to influence the field. This in turn influence the probability that an actor will try to start a divergent change.

Battilana, Leca and Boxenbaum again (2009) reach the conclusion that "“depending on the institutions from which they diverge, divergent changes may be initiated by actors occupying different social positions””.

Field level conditions

DiMaggio and Powell (1983) hypothesize that on field level the institutional isomorphism is positively correlated to the dependence of a field from a single source of support for vital resources, transactions with government agencies, limited alternatives for organizational models, uncertain technologies, objective ambiguous, professionalization and structuring.

Oliver (1991) suggests that the organizations can use an ample range of strategic responses to the institutional environment. Organizational responses vary from those conforming to those resistant, depending on the strength of institutional pressures toward the conformity that are practiced on the organizations and depending on the powerfulness of the organization. According to Oliver (1991) a series of characteristics on field level influence the institutional pressures and the way according to which the organizations can respond to these pressures. In first place when the institutional demands can improve the legitimacy of an organization, the organization will be motivated to conform to such applications and the resistance will be difficult (Meyer & Rowan 1977).

In second place, the strategic responses will be influenced by the characteristics of the constituent groups as public agencies and employees creating institutional pressure on organization. When there are more constituent with potentially conflicting goals, the power of the institutional pressures can be more weak (Powell 1991) and the organizational resistance can be easier. The greater the measure the institutional constituents groups control the allocation or the availability of critical resources for the organization, the more difficult will be the resistance to the expectations of that constituent (DiMaggio & Powell, 1983). Third, the content of the institutional demand is another influence on the organizational response. When the institutional pressures are in conflict with the organizational objectives or they bind the ability of an organization to reach its own objectives, the resistance is more probable. In fourth place, the nature of the institutional control can determine the way the organizations respond. Two processes exist through which the institutional pressures to the organizations are imposed: legal coercion and voluntary diffusion. Conformity is more probable when the pressures are imposed by powerful institutional actors and when the norms and the expectations are voluntarily been adopted (DiMaggio & Powell, 1983).

Finally, the environmental context of an organization, particularly, the extension of the environmental uncertainty and the interconnection, model the organizational responses. An elevated environmental uncertainty pushes the organizations to try to reduce the uncertainty by acquiescing to the institutional pressures. When there is a high degree of interconnection among the organizations, the diffusion of the institutional norms and practices is spreaded and the probability of conformity is

elevated (DiMaggio & Powell, 1983; Meyer & Rowan 1977).

Battilana, Leca and Boxenbaum (2009) they propose that, close to the social position of an actor, also the characteristics of the field play an important role to determine the space for the agency. The characteristics of the field can influence if the actors become institutional entrepreneurs, but the actors perceive the conditions of the field in different way according to their social position in a field, that influence their "point of view" on the field and gives them a differential access to the resources. The first form of characteristics of the field that allows the institutional entrepreneurship includes shake and consequential crisis from social upsettings, technological interruptions, competitive discontinuity and normative changes that could break the status quo and to give space to new ideas (Battilana, Leca and Boxenbaum 2009). Also, the degree of heterogeneity and institutionalization might play a role in enabling institutional entrepreneurship. If many alternatives exist, when heterogeneity is elevated, there is space for agency or institutional entrepreneurship. Heterogeneity can cause internal incompatibility and the experience with contradictory institutional pressures it is susceptible to provoke a reflection. This means actors will not take any institutions for granted and could induce to question the current institutions and to diverge from them. When the degree of istituzionalization is low, it is probable that more uncertainty exists, that could provide space for strategic actions (DiMaggio, 1988). Nevertheless, the institutional entrepreneurship might also occur in sectors highly institutionalized.

Organization level conditions

- Power (+) (M&R)
- Centralization of resource supply(-) (D&P)
- Goal ambiguity (-)(D&P)
- Reliance on academic credentials (-)(D&P)
- Manager participation in professional associations (-)(D&P, 1983)
- Social position (+)(Battilana, Leca, Boxenbaum)

Field level conditions

- Dependence on single source of support for vital resources (-)(D&P)
- Transactions with government agencies (-)(D&P)
- Alternatives for organizational models (D&P)
- Uncertain technologies (-) (D&P, 1983)
- Goal ambiguity (-) (D&P, 1983)
- Professionalization (-) (D&P, 1983)
- Structuration (-) (D&P, 1983)
- Institutional demands' contribution to legitimacy (-) (Oliver, 1991)
- Constituent pressure (-) (Oliver, 1991)
- Conflict between external demands and internal goals (-) (Oliver, 1991)
- Institutional control (-) (Oliver, 1991)
- Environmental uncertainty (-) (Oliver, 1991)
- Interconnectedness (-) (Oliver, 1991)
- Social upheaval (+) (Battilana, Leca, Boxenbaum, 2009)
- Technological disruption (+) (B,L&B, 2009)
- Competitive discontinuity (+) (B,L&B, 2009)
- Regulatory changes (+) (B,L&B, 2009)
- Heterogeneity (+) (B,L&B, 2009)

- Institutionalization (-) (B,L&B, 2009)

2.4 Strategic responses

In the preceding section some conditions of qualification have been reassumed for the agency or the action towards change. In this section the attention will be turned to the strategic actions that an organization can use in response to the institutional pressures. Oliver (1991) proposes that the institutional explanations of the reproduction and the isomorphism underline the role of the conformity, of the habit and convention, rather than the power and the organizational control, in contributing to stability; power tends to be attributed to the institutional environment rather than to the organizations (DiMaggio and Powell's, 1983). Oliver (1991) also proposes that institutional theory can accommodate interest-seeking, active organizational behaviour when organizations' responses to institutional pressures and expectations are not assumed to be invariably passive and conforming across all institutional conditions. Oliver (1991) suggests that the organizations can use an ample range of strategic answers to the institutional environment if they assume a potential of variation in the resistance, awareness, proactivity, influence and personal interest of the organizations. Organizational responses will vary from conform to resistant, from passive to active, from preconscious to controlling, from impotent to influential and from usual to opportunistic, according to the institutional pressures toward the conformity that are exerted on the organizations. Oliver proposes five types of strategic answers, that vary in active agency from the organization from the passivity to the increasing active resistance: acquiescence, compromise, avoid, defy and manipulation. The strategy to acquiesce refers to conscious or less conscious acts of conforming. An organization can stick blindly to the rules taken for granted. Also an organization can imitate organizations of success, the mimetic isomorphism (DiMaggio & Powell 1983). Organizational acquiescence depends on the organization's conscious intent to conform, its degree of awareness of

institutional processes, and its expectations that conformity will be self-serving to organizational interests.

When organizations are confronted with conflicting institutional demands or with incongruities between institutional expectations and internal objectives to efficiency or autonomy, the organizations can feel the need to compromise. Often total conformity is simply impracticable. Parity therefore needs to be reached among multiple stakeholders and internal interests. Negotiating with environment starts from departing from the presupposition that the organizational relationships with the environment is open to the negotiation and to exchange. With the compromise, conformity is just partial and the organizations defend more actively its own interest than that with the acquiescence.

Avoidance is defined as the organizational attempt to block the necessity of the conformity. The organizations can disguise the non conformity behind a façade of acquiescence. An organization, can establish for instance plans and rational procedures elaborate in order to answer to institutional requisite with the purpose to disguise the fact that doesn't intend to implement them. Meyer and Rowan have also recognized this disguise of the non conformity suggesting whether to get legitimacy with their constituents (Meyer and Rowan 1977); the organizations were prone to build histories on their actions to satisfy the social expectations on what such an organization should do. These stories did not necessarily have any connection with what the organization actually do, but rather were used as forms of symbolic reassurance for the public. The organizations can also detach or decoupling the technical activities from external contact to reduce the external examination or inspection and to maintain the autonomy. An organization can finally, escape the pressures existing of a certain field or altering activities. The avoidance is motivated from the desire to elude the conditions of conforming behaviour.

Defiance is an active form of resistance to institutional processes. Organizations can dismiss institutional pressures, challenge them or attack them, which is the most aggressive form of defiance. The defiant strategy represents unequivocal rejection of institutional norms and expectations, and is likely to occur when the perceived cost of active divergence is low, when internal interests diverges dramatically from external values, when organizations believe they can demonstrate the rationality or righteousness of their own alternative convictions and conduct, or when organizations believe they have little to lose by displaying their antagonism toward the constituents opposing them.

Manipulation is the most active and resistant response to institutional pressures because it is intended to actively change or exert power over the content of the expectations themselves or the

sources that seek to express or enforce them. Manipulation involves the active intent to use institutional processes and relations opportunistically, to modify or neutralize institutional constituents, to shape and redefine institutionalized norms and external criteria of evaluation, allocation, or expression of social approval and legitimation. Manipulation will be employed primarily when institutional rules and values are weak and present opportunities to manipulate. It is the strategy in which an organization tries to change the institutional environment to fit its requirements, rather than the opposite.

TABLE 2
Strategic Responses to Institutional Processes

Strategies	Tactics	Examples
Acquiesce	Habit	Following invisible, taken-for-granted norms
	Imitate	Mimicking institutional models
	Comply	Obedying rules and accepting norms
Compromise	Balance	Balancing the expectations of multiple constituents
	Pacify	Placating and accommodating institutional elements
	Bargain	Negotiating with institutional stakeholders
Avoid	Conceal	Disguising nonconformity
	Buffer	Loosening institutional attachments
	Escape	Changing goals, activities, or domains
Defy	Dismiss	Ignoring explicit norms and values
	Challenge	Contesting rules and requirements
	Attack	Assaulting the sources of institutional pressure
Manipulate	Co-opt	Importing influential constituents
	Influence	Shaping values and criteria
	Control	Dominating institutional constituents and processes

Table 2 'strategic responses to institutional processes', (Oliver, 1991:152)

2.5 Institutional change

Organizations don't necessarily need to blindly conform to the institutional pressures. Rather the organizations can make strategic choice in the attempt to answer to the institutional pressures, which means that there can be room for agency. A certain number of enabling conditions can expand this room for agency, which means that the organizations can actively diverge from the institutional pressures. It is therefore possible that a lot of organizations in a field choose to diverge from the norm and to withstand the institutional pressures. When this happens, the institutions can be eroded or break. This is what Oliver (1992) calls deinstitutionalization. The deinstitutionalization is defined as the process through which the legitimacy of a consolidated organizational routine erodes or interrupts (Oliver 1992:). Scott (2001) defines it as "the process by which the institutions weaken themselves and disappear." The deinstitutionalization happens when the organizations don't succeed in reproducing practices or established organizational procedures. Scott (2001) has

underlined the importance of the deinstitutionalization, underlining that it is useful to put studies of deinstitutionalization in a broader context of institutional change, since the weakening and the disappearance of a whole belief and practices is probably associated to the arrival of new beliefs and practices. Literature offers a lot of reasons why the institutions corrode, varying from the weakened legislation and from the increasing resistance to erosion of norms and cultural beliefs. Oliver (1992) proposes three types of pressures that bring to the deinstitutionalization: politics, functional and social. The political pressures include increasing crises of performance, conflicting internal interests, increase of the pressure due to innovation and change of the external dependencies. The deinstitutionalization of an organizational practice can be a political answer to the change of the distributions of power or a protective answer to a threat or a perceived failure. The functional pressures include the change of the economic utility, the increase of the technical specificity, the increase of the competition for the resources and the events and the emergent data. These pressures can challenge the functional necessity of an institutionalized practice.

The social pressures include the increase of the social fragmentation, the decrease of the historical continuity, the change of institutional rules and institutional values and the increase of the structural disaggregation. Although all these factors can influence the deinstitutionalization, certain particular factors will exhibit primacy in determining de-institutionalization. The changes of the government regulation and internal performance crises are defined by Oliver (1992) as the most important causes of the deinstitutionalization.

Greenwood, Suddaby and Hinings (2002) they sustain that the professional associations develop in the moments of deinstitutionalization and change. They suggest that in that moments the professional associations can legitimate the change entertaining a discursive process through which the change is discussed and sustained (Greenwood, Suddaby and Hinings 2002).

First Greenwood, Suddaby and Hinings (2002) give their contribution to the institutionalisation of an organizational field. The fields are defined as community of organizations that interacts among them or are influenced by the other in meaningful way. To this Scott (1995) adds that the models of interaction are defined by shared meaning, that established relationship and the appropriate ways to behave. They discuss that the organizations develop categorization of their interactions, that becomes objectified and therefore they constitute social reality. The organizations in this reality aim to reduce the ambiguity and the uncertainty. Over time these shared understandings become reinforced by regulation enforced coercively and normatively by state agencies and professional associations. This maturation and specification of roles, behaviours, limits and interactions is defined as structuration of the organization. Nevertheless, according to Greenwood, Suddaby and

Hinings (2002) these roles, behaviours, limits and interactions are not fixed, and the structuring process doesn't mean a perfect reproduction. They sustain that the institutional processes can confer to a field the aspect of the stability. Through socially negotiated consensus fields will exhibit periods of isomorphic stability. Nevertheless, the fields should be never considered completely stable and static, but rather to be in continuous evolution.

The phase 1 is verified when events or variations destabilize the existing practices. These shakes can be in the form of social upsetting, technological interruptions or normative changes (Powell 1991). Later arrives the phase 2, deinstitutionalization, that means the entry of new actors, the ascent of actors or institutional entrepreneurship (DiMaggio 1988), can disturb the field level consensus introducing new ideas and therefore possibility of change. The stadium 3 is called pre-institutionalisation. The organizations innovate in independent way and they seek the legitimization of their innovations. In the fourth phase, the new practices can be largely adopt by theorizing them. They simplify and they distil new practices. The theorization is the process by which the deviations from the conventional practices are abstracted and made available for broader adoption. It is important that a certain organizational failing and a workable solution for that failing are specified. This solution also needs to be justified in order for the solution to proceed to stage 5, diffusion. So that the diffusion takes place, new ideas must have introduced in convincing way, they have to be communicated in a more appropriate way than the existing practices. New ideas must morally and pragmatically be legitimate, so that the diffusion takes place. As soon as the innovations or the new practices spread, they become increasingly objectified and they gain social consensus about their value, increasing diffusion even further. The complete institutionalisation of the new practice or reinstitutionalisation, happen in the phase 6. New ideas are sufficiently adopted for receiving the legitimacy and they become taken for granted as the natural way of how to make the things. When new ideas are completely institutionalized, they can be uncontested for a certain period of time, depending by the strength of the new institutionalization.

Greenwood, Suddaby and Hinings (2002) affirm that, in a normative context, it is unlikely that legitimacy entirely founds on the economic outputs. They sustain that new ideas could have to be justified before the diffusion in the phase of theorization. Especially in mature and highly structured environments, where the confinements of the professional communities and the appropriate organizational enterprises are well established, the theorization is of great importance.

Institutions as the state or the professional associations, develop an important role in the theorization because "they allow the formation and the reproduction of meanings and shared agreements. Greenwood, Suddaby and Hinings (2002) they offer three motives for which the

professional associations are important. The organizations first of all, interact through these interactions and they create shared agreements. Second, the shared agreements also derive from the interaction with other professions and the professional associations. In third place, the professional associations can develop an important role in the monitoring of the normative and coercive expectations.

2.6 Management Control System

Control, at the current time can be defined as an operational process which, together with information aspects, must also accommodate organizational approaches and monitor the behavioural impacts produced.

Management control systems (MCSs) are packages of tools that organisations utilize to achieve their goals by aligning organisational conformity with underlying social expectations, which is the source of legitimacy and resources via the implementation of leaders' strategies (Simons, 1995).

What constitutes legitimate goals and how organisations may reach them is shaped by institutional logics, understood as taken-for-granted social prescriptions that represent shared understandings (Scott, 1993) because they guide decision-making as broad belief systems in an institutional field (Thornton and Ocasio (1999). MCS can be seen as socially accepted patterns that are enclosed in broader cultural beliefs and rules and therefore serving as decision-making rationales on the micro-level.

Anyway organisation are not homogeneous collective of actors that share the same understandings and enact the same institutional logics, instead every member of an organisation contributes to the creation of a shared understanding, each of them adding part of their knowledge.

Organisational members are different and therefore adopt different institutional logics in the same organisation (Battilana, Leca, Boxenbaum 2009) and that organisational leaders are the driver factors explaining heterogeneous organisational responses.

Organisations deal with "institutional complexity" whenever they face institutional logics, particularly in situations where institutional logics conflict (Thornton and Ocasio, 1999). To understand organisational responses to a multiplicity of institutional logics, everyday practices have been studied since practices are the foundations that establish, maintain or break institutions. MCSs play an important role in shaping the routines of an organisation that in turn contribute to the creation of organisational reality and are simultaneously altered to be compatible with different actors and specific contexts. In particular, MCS has attracted much scholarly attention in situations

of institutional complexity, as it constitutes a formalised management tool that can be used by organisations to strengthen their legitimacy and because they serve as automated rationalisation of a priori decision-making.

All this translates into the integrated use of measurements involving vision, mission, goals and objectives not only related to the financial aspects, but also related to the environmental and social sphere, to the integrated management of short and medium-long term aspects and also to the consideration of the impacts produced by the relational dimension that requires to go beyond the boundaries of the enterprise, comprising the various level stakeholders and the differences of the organisational members inside each organization, the so called intra-organizational level.

However, focusing just on practices underscores the importance of structural responses to multiple logics. Furthermore, concentrating on one management control tool marginalises the broader control setting of the firm, i.e. the nexus of controls (Malmi and Brown, 2008) and the relevance of alternative forms of control such as informal, cultural or administrative controls

Cultural Controls						
Clans		Values			Symbols	
Planning		Cybernetic Controls				Reward and Compensation
Long range planning	Action planning	Budgets	Financial Measurement Systems	Non Financial Measurement Systems	Hybrid Measurement Systems	
Administrative Controls						
Governance Structure		Organisation Structure			Policies and Procedures	

Fig. 1. Management control systems package.

Since the companies have been transformed from the switch in competition based on information, their ability to exploit intangible assets has become far more decisive than their ability to manage physical assets, this is especially true for SMEs that for value creation rely particularly on personnel work force knowledge and coordination.

In order to monitor the effectiveness of the MCS in such a complex environment measures for track the advancement of the strategy implemented to achieve the targeted goals are needed.

A common situation of nowadays sees management focused exclusively on financial tools like budgets and on operating plans, which are often flawed and may not be aligned with strategy. There are many studies that have highlighted issues related just to the use of financial measures for planning and control; some of these issues are: very time consuming, assumptions quickly outdated, eventual prevention of value added activities, rushed decision making process, internal extreme competition for resources employability.

All this leads to the contention that it is increasingly complex to achieve a universal measure of performance and therefore it is necessary to consider the multidimensionality of the measurement of performance and of the indicators necessary to capture it.

Basically the problem is that management doesn't have a framework for describing and executing strategy and translating this strategy into operational plans and control systems. Moreover very often management doesn't conduct regular reviews of its strategy.

In 2009 a framework was conceptualized (Ferreira, Otley 2009) that allows companies to support the design and implementation of the performance management system by proposing (in the form of questions) twelve elements that represent the fundamental elements to be considered. The approach emphasizes the centrality of the definitions of goals and objectives by the company, despite the complexity being recognized both in the definition phase and in the process of prosecution.

By adopting this approach, the control systems make it possible to support the entire organization in the whole strategic process, including the formulation and implementation of the strategy itself. The questions involve the following areas:

- Vision and Mission: what are the organization's vision and mission and how have they been brought to the attention of managers and employees?
- Critical success factors: what are the fundamental critical factors for the future success of the organization and how are they communicated to managers and employees?
- Organizational structure: what is the organizational structure and what impact does it have on the design and use of performance management systems?
- Strategies and action plans: what are the strategies and action plans of the organization? And how are they generated, adopted and communicated to managers and employees?
- Key performance indicators: what are the key performance indicators of the organization and how are they specified, communicated? What is their role?

- Target (performance levels): what level of performance should the organization achieve for each of its key indicators?
- Processes: which processes does the organization use to assess performance at the individual level, groups of individuals and as a whole?
- Reward systems: what rewards (financial and / or non-financial) will managers and other employees be able to achieve in order to reach the established targets or other aspects related to performance under evaluation?
- Information flows and related systems: what information flows, systems and networks has the organization created to support the operation of performance measurement systems?
- Use of information: how is the information used?
- Changes in performance management systems: how have performance measurement systems changed based on changes in the organization or in the external context? Are these changes proactive or reactive?
- Components of performance management systems: how strong and consistent are the relationships between the components of the performance management systems and how they are used?

For the purpose of our research, as such an all-encompassing framework applies very well to well-structured companies but not so to small and medium-sized companies, which largely compose the Italian business context.

In fact, in small and medium-sized enterprises the most used control system according to the scheme formulated by Malmi and Brown (2008) is the clan that is based on informal acceptance of broadly recognized mechanisms: legitimate authorities, shared values and beliefs. These mechanisms are also likely to be found at the cultural level outside the company, in the daily life. The sociohistorical context, which is reflected in the prevailing rules, norms and values and in the structures of the organizations is especially embedded in such spontaneously structured organizations that are the small and medium enterprises. Such an organizational model of familiar type is what makes small and medium-sized companies more connected to the local context than large companies. This entails a greater attention of the latter in adapting to the context in order to survive. One methods of control for small and medium-sized companies is the behaviour control exercised by the authority recognized to the owner/manager. In case of lack of specific hierarchies the tendency is to give credit to the figures with the highest seniority and to the figures trusted by the owner. Another type of control is given by the sharing of common experience among the people in the company that very often translates in membership of same clan. Connections between people

who are part of the clan goes in both directions: from the job place to the spare time and viceversa. This deep knowledge of each other can ease the monitor on behavior if a bound to the management strategy is built since is strengthened the social control.

Regarding the information requirements for control, it can certainly be said that small and medium-sized companies implement a form of implicit control that often grows spontaneously as the product of the interaction of the different actors eradicated in a specific cultural context. Typically, an explicit information model used in broader structured organization must be created and constantly kept up-to-date through training, promotion of company values and communication of objectives and strategies to achieve them. This can generate obvious costs that can worsen business performance to the point where it is not advantageous to adopt an explicit information system. The implicit information system instead is based on stories rituals, ceremonies that convey the values and beliefs of the organization, that provides all the necessary information for the decision making process. This is less costly but requires skilled people or a lot of time to built the skills.

When it comes to the design of the specific control model we can say that there are two ways of establishing an effective control mechanism: the first is to train, instruct, monitor and evaluate resources and the second one is to select resources that adapt perfectly to the needs of the organization.

Small and medium-sized enterprises generally adopt this second approach, mainly for economic reasons (financial and organizational resources constraints). However, even from a perspective point of view, careful use of this type of approach can be highly efficient because in addition to minimizing costs it can create an environment of common values that leads to a spontaneous mechanism of social control, not only of mutual control but also of automatic sharing of business practices and processes through informal training (exchange of information between colleagues who share the same values and culture). The countereffect of this type of approach is that this environment tends to reproduce itself as it is because new elements of change are not welcomed from the outside: the assumption is that we choose people who share the existing values that are not questioned at all. The innovative process that leads to change is therefore much slower and more difficult. Finally, it should be noted that even when the best possible control design has been successfully implemented, the organization's development over time is not completely predictable a priori, consequently the control model must be modified periodically as a result of the changes occurring in the organization. It is suggested that design can create effects that are highly non-intuitive therefore, the mobilisation of the design has to be oriented towards its rectification so that

it is possible to live with it, at least up to the point in which is preferable and more convenient to rebuilt the design structure from the beginning.

“The procedures developed by the design are actors that over time can transform organisations radically, and this calls for others to intervene into the effects of the design. This is mobilisation where managers intervene and supplement the design with processes and procedures that take the edge in terms of unintended effects away from the designs.” (Mouritsen 2005 p:1)

This is especially true for small and medium-sized businesses that can not spend a lot of time and resources on designing and implementing a structured management control systems. In context where the hierarchical levels are less numerous and where individual tasks by position are less rigidly defined, individuals have more weight in aligning the goals and objectives to daily practices or in deviating from them.

Organizational leaders can play an important role in directing the members of organizations that enact different logics towards the proper direction. Therefore, we will draw on the notion of MCS as a "Package" (Malmi and Brown, 2008), emphasizing the importance of organizational members in general and leaders, from a dynamic perspective.

3 Research method

As our research explores content, process and context of technological reform in the private sector involving many stakeholders and address the motivation, means and ends of the companies towards the reform is issued qualitative research is the appropriate option, and few case studies are performed.

The study consist of four stages. During the initial (orientation) stage, we studied the current situation in Italian industrial sector. We had as reference point The Industry 4.0 Observatory. The Industry 4.0 Observatory is the main hub in Italy for managers and decision makers that are active and open to comparison with international practices on changing the Industrial sector technology.

As part of the 2017-2018 Research, the Observatory aims to:

- analyse the evolution of digital innovations on the processes of the operations world, both in terms of technologies and application areas;
- assessing the main results for 2017, one year after the launch of the National Business Plan 4.0;

- deepen the comparison with foreign countries, both at the level of business experiences and at the level of national policies;
- deepen the professional figures identified for Industry 4.0 by analysing the evolution of the main digital skills and training paths necessary to acquire them;
- study the role of two «enablers» of Industry 4.0; finance and infrastructure. Analyse the initiatives launched by the banks to support the spread of the 4.0 industry and the state of the art of infrastructures enabling connectivity;
- monitor the Italian and international Start-up 4.0 world, understand its dynamics and business models;

In addition to analysing the reports of the Industry 4.0 Observatory, interviews with experts, with substantial knowledge about the current situation and the last developments in the Industrial sector, informed the earlier description of the context of the sector. During the second stage, we developed the theoretical framework of our study. The third stage comprises the case study, with a number of interviews we conducted with actors representative of the recipients of the reform.

The interviews took in consideration topics related to the methods used by the companies to align and adjust their management control system with the ambitions of the reform.

The interviews is performed with a variety of actors belonging to different organizations at various hierarchical levels (not just top management), as technologies are also used at the operational level the opinion of users is relevant and is also the basis at the aim of the reform. Being many and varied the stakeholders involved in this initiative we tried to reach different kind of actors in order to provide different perspectives on the phenomenon.

The data have been collected, by looking at the opinions and responses of the participants and having assessed them together with the data from the observatory 4.0. Other documents and relevant organizations' websites have been consulted. More specific information derived from notes, letters and the web site of the organization represented by the interviewee was also used as additional evidence on issues addressed during the interviews. Thus, data analysis and data collection have evolved. However, the use of semi-structured interviews also enabled us to detect inconsistencies among various data or data source. We took the different kind of measures to enhance the reliability and validity of our data collection. In the final stage, we analysed our case material using the theoretical framework.

Our data analysis have been informed by the theoretical framework introduced in the previous section. The documents have been analysed to assess the extent to which theoretical constructs, including expected relationship consistently emerged from these data (Silverman, 2005).

The results have been elaborated and the findings have been discussed in order to draw the conclusions.

3.1 Methodology

This chapter describes the process that has been select to answer to the research questions and to reach the objective of this thesis. The chapter will introduce the decisions that have been taken in relationship to the design of the research, the methods of harvest of the data, the selection of informants and the analysis of empirical data. Later, the chapter discusses the quality of the research together with reflections on the ethical aspects of the thesis.

3.2 Qualitative research

As we are studying to investigate the responses of the companies to the initiative INDUSTRIA 4.0 in the Italian industrial sector qualitative research method always seeks to give meaning of the events with the help of the people who will explain a certain situation and their assumptions come from their experiences . Our study falls in qualitative method which is exploratory, explanatory, and descriptive than in research using quantitative methods. Qualitative method is appropriate for the study because this method dig out personal insights of an events rather than looking for the reality of the circumstances. This type of study requires a small number of case studies which could be multiple case studies to generate information from the in depth knowledge of the participants.

3.3 The design of the research

The design of the research involves all the phases of the process of research that follow the statement of the research question and the purpose of the research. The questions of research are been planned in advance, actually in the very beginning of the research. In other words, the design of the research depends on what we already know and what we want to find out. Usually the researcher can choose among an exploratory, descriptive or causal design (Sreejesh, Mohapatra, Anusree, 2014). In this case an exploratory design seems to be the most appropriate alternative in order to investigate the responses of the companies to the initiative INDUSTRIA 4.0 in the Italian industrial sector. This thesis will be more particularly, projected as a multiple case study.

This approach has much in common with the declaration of the problem in the sense that the case study is related to a small number of organizations, events or individuals, during a certain period of

time (Easterby-Blacksmith, Thorpe, & Jackson, 2012). Among the other things, (Yin, 2013) design of the case is particularly remarkable when:

- the principal questions of research are questions "how" or "why"
- a researcher has few or no control on the behavioral events
- the focus of the study is to contemporary phenomenon

However, it is possible to say that there is not just a single way of carrying out a case study, but there are different methodologies and approaches. According to Easterby - Smith et al. (2012), the characteristics of the design of the case study will vary depending by the point of view of the researcher. A constructionist approach could for instance prefer the approach of Stake (1978) who is against the generalization of the nature of case study and believe that the design emerges through the research. A positivist approach, on the other hand, it is more likely to fall into the definition that of the case study gives Yin (2013) on which, in great measure, it focuses on the validity and the reliability of the study. At the same time, Yin recognizes the differences that occur when it comes to case study and state that is not of exclusive dominion of the positivists researcher. Even if its approach is certainly methodological, he offers a certain amount of advices that can be used to make the research more suitable to the epistemological area. Moreover, he offers an approach detailed for what can be done in practice, that is very useful for an inexperienced researcher. Accordingly, this thesis will be projected as a case study based on Yin.

When is planned a case study in conformity with Yin, it is necessary to take a decision regarding two dimensions. From a side, it need to be considered if it's better to go for individual-case or a multiple-case study. On the other side, the second dimension is about the unit of analysis: single or a multiple unit of analysis. Not only these choices are tied up to the problem statement but also to the availability of data and the structure of the research.

In this case I decided to circumscribe the population to a sample of three to five companies. The aim of the research is not to provide a full comprehension of the Italian industrial sector but to provide knowledge about how and why companies choose to adopt or reject incentives related to the Italian government economic reform called Industry 4.0. In other words, this thesis has been conceived as multiple case study (the company respondents) based on single unit of analysis (the management control system).

In fact while the choice of the multiple case study is due to the dichotomy of the research, the unit of analysis is how the companies respond and what kind of change the response will cause (measured in terms of organizational change).

3.4 Methods of harvest the data

The main and most important features when it comes to case study is the fact that the researcher wants to pick up as many as possible information on the case that is studied. When this information are picked up, the design of the case study allows the researcher to apply a vast range of different methods. The most proper method in broad extent depends on the problem statement and the problem purpose of the research. It's already been stated that the nature of this thesis is of exploratory nature. The objective is to understand rather than measure the phenomenon. When this is the kind of case, many authors in the literature suggest that the qualitative methods are usually preferable. What characterizes these methods is the fact that you pick up information through speaking with people.

According to Easterby-Smith et al. (2012) this approach allows the researcher to discover "The points of view, the perceptions and the opinions s of both the individuals and groups through the language that they use; the principal method to get this is with in-depth interviews".

This is of great relevance especially when it comes to the research questions, qualitative methods and specifically in-depth interviews, have been select to pick up primary data. During the process of harvest the data, anyway, there were also used secondary sources of data.

3.5 Documentation

In order to get an overview of measurement of the responses of the Italian industrial sector a point of natural departure has been found in examining the information and the available relationships on the website of the official observatory of the initiative held by two different institutional entities as the University of Milan (Politecnico di Milano school of management) and Assolombarda, the association of the industrial companies of the Lombardia italian region.

Besides the general information concerning the attention on the Italian industrial sector, there were also some specific case studies regarding specific topics or specific tools of the reform used as practical example by a single company. Then there are specific information on individual company websites and reports from other unofficial category associations.

Yin (2013) warns against having too much reliance on secondary sources of data as the documentation could be partial or lacking of objectivity. This could for instance mean that information are published according to what the publisher wants to create. In the initial phase of the harvest of the data the various forms of documents have been used for developing a initial understanding of the Italian industrial sector and the context in which the reform INDUSTRIA 4.0 is incepted. Then there is a part in which the reform is explained and the specific tools are analysed in the detail. Which aspects of the reform has the greatest relevance and how these aspects are assumed and implemented practically inside the sample companies and how these companies

measure the future benefits of the reform. The intuitions that have been acquired have served as foundation on which to develop in-depth interviews.

3.6 In depth interview

The interview is the method applied more frequently in the harvest of qualitative data. The advantage to conduct interviews is the possibility to get first-hand descriptions of the phenomenon that is about to study. Moreover, while it offers flexibility it could also allow the informants to get close examinations on aspects of the problem that the researcher have not expected to deal with. This could be particularly important in an exploratory research like this, in which the researcher doesn't possess a great knowledge on the area that he is studying. Interviews works better than surveys in order to influence the informant in what communicates, it is particularly effective when the purpose of the interview is to get an understanding of the experiences and perceptions of the informant.

Nevertheless, the degree of influence that the informant will have depend on the structure of the interview. Connected to this, Easterby-Smith et al. (2012) distinguishes three levels of structure. In a structured interview, the interviewer will make trust on questions that have been developed before the interview in the form of a questionnaire. The job of the interviewer is to set the questions and to transcribe the answers, or to extract the message that is communicated. Moreover, the order of the questions is usually predetermined there is less flexibility than the semi-structured or unstructured interview. In an unstructured interview, on the other hand, the interviewer has not usually developed the questions that drives the interview in advance. Although the problem and the general themes could have been planned, the interview will be more similar to an informal conversation. Even if it's proper that an unstructured interview would be appropriate for the exploratory nature of this research, there could also be some issue in following this approach: for example a meaningful quantity of the information collected could result to be irrelevant for the research. In the case of this specific research, there couldn't be a big risk because of the quantity of sources involved and especially because of the reliability of the sources that are internal to the sample companies and with a central role in managing the topics of the research. Besides, even if the thesis is of exploratory nature, the researcher do not to possess a vast knowledge of the industry and relative specific features, the information from secondary sources of data provide opportunities to structure the interviews. Accordingly, the selected structure of the interviews was what Easterby - Smith et al. (2012) called semi-structured.

This means that the main questions that drive the interviews has been developed before the interviews.

The format contain some specific questions related to secondary data, it's mainly focused on the

themes embedded in the research question and the sub-questions. Although the format was fully completed before the interview, it's possible that during the interviews some answer of the interviewee can stimulate new and unpredicted questions. In fact, during the interview will be asked continuous questions that will generate other questions in order to get to the bottom of the topic.

This is due to the exploratory nature of the research and to the semi-structured nature of the interview.

3.7 Informants' selection

In the part related to the methods of harvest the data has been established that the primary data have been picked through the use of in-depth interviews. Following this, it has been necessary to consider different connected aspects to the application of the method. How many interviews I need? How I should select informants? How I should recruit them? These questions are the base of the following parts.

3.8 Dimension of the sample

The optimal sample size at the beginning of the project was estimated between four and six case studies and at least six interviews. However, due to the nature of the topic, which is relatively new and concerning sensitive data related to strategic business plans, there have been difficulties in finding sources available. In particular, the method of approach, namely the face-to-face interview, has proved to be a mode of interaction that is not particularly congenial for target companies due to the general lack of availability of great part of the contacted companies. In this respect I want to underline the kindness of the people that accepted to be interviewed. The sample size at the completion of the research has been composed of four interviews and four case studies each interview belong to the relative case study.

3.9 Strategy of selection

The selection strategy was carried out first of all by gathering information on the reference context. Initially I took into consideration the whole national geographical area. I participated to the SMAU convention in Milan where I met representatives of companies from each part of Italy. In particular I used the contact with a company based in Tuscany, a region in the centre-north of Italy to develop one of the four case studies. I also circumscribed the area of action to my region of origin (Abruzzo) in order to have a deeper understanding of the external context in which some of the respondents operate. Having circumscribed the scope I went to the local chamber of commerce and then to the local association of industrialists: Confindustria Ch-Pe, to obtain a list of names to contact. Later I was invited to a convention about Industry 4.0 topic named: "Industry 4.0: Ready for the future" organized by Confindustria. Here I had the opportunity to acquire contacts and in fact two of the

four interviews were carried out with people I met at the conference. The last interview was performed with the owner of a small enterprise that I know since long time ago.

3.10 The informants' recruitment

I recruited two of the interviewees at the conference organized by Confindustria entitled: "Industry 4.0: Ready for the future" at the city of L'Aquila in the Abruzzo region. Once I got in touch, I scheduled the appointments and went to the offices to do the interview. The interviews took place at the company's offices, in the first case, and at the interviewee's home in the second case. I chose just those companies because both the interviewees are well-informed people and they were available to be interviewed. The third interview was collected thanks to the long-standing knowledge with an entrepreneur in the field of automatic doors that although not yet joined the national industry 4.0 plan, his company will join the tools of the reform in the future. In this case the interview took place outdoor. This interview gave me a different perspective because the informant is not part of the Confindustria professional association. The last interviews has been performed at the telephone because of the convenience for the interviewee to choose such a mode. All documents are stored and available on request.

4 Case studies

A case of study is defined as " empirical investigation that it investigates on a contemporary the real phenomenon - context of life, above all when the confinements between phenomenon and context clearly is not evident (Yin 2003). This definition by Yin is about the general definition of case study research, while another part concerns a series of characteristics. This part of classification recognizes that the phenomenon and the context are always not evidently distinguishable in real - life contexts. A case study is preferable when we are confronted with specific situations that do not have clear links between the reality to investigate and the phenomenon we want to detect, technically is relied on multiple sources of data and take advantages from the development of assumptions made by literature and theory in order to drive the data collection and analysis.

As we are using qualitative method as our research design, so we decide to use case study method because we are going to investigate three companies which we consider as three case studies. Eisenhart, 2002 mentioned that case study focuses on a particular instance or multiple instance and it examines the dynamics which has been happened in occur in each situation. Case study includes individuals, groups of individuals. These collections of participants will share their view point on a specific study and they will present their behaviour towards this problem (Bogdan & Biklen, 2003,

p. 56). Case study tells researchers to be focused on research problem rather than exploring the subject and it creates theories from the collected data (Bogdan & Biklen, 2003).

4.1 Background context

The market for Industry 4.0 projects (including IT solutions, enabling technological components on traditional production assets and related services) in Italy in 2016 is worth around 1.7 billion euros, of which 84% realized towards Italian companies and the rest as exports, to which an induced amount of about 300 million euros must be added in "traditional" digital innovation projects. Ceteris paribus, compared to last year, the market growned by 25%, even if the real potential is still hidden because many companies did not release data publicly mainly because of the tax clarifications report from the ministry of finance. For this reason, expectations are even stronger for 2017: the companies estimate a growth rate of 30% compared to 2016. Projections ate that, in two years Italy will have almost doubled its investments in digital transformation, catching up with respect to the more mature international situations, with the concrete risk of an excess of demand with respect to supplier delivery capacity.

The level of knowledge on Industry 4.0 has increased: on a sample of 241 manufacturing companies, only 8% say they do not know the topic (a year ago was 38%), 41% read articles online, 32% participated in events on the subject and 28% are considering doing something, while another 28% have already started the adoption of solutions. The fervour of the Italian scenario is witnessed by an average of 3.4 applications already adopted by each company, especially on Industrial IoT and Industrial Analytics technologies, with a very differentiated situation: 25% of the most active companies already have started 5 or more applications, while the last 25% have started one or none. Knowledge of the National Industry 4.0 Plan is also good: only 16% of the companies in the sample do not know the measures. Among those who know it, 52% have decided to take advantage of the super-depreciation to 140% and 36% of the hyper-depreciation to 250%, while 29% will use the tax credit for research and development, 7% will make investments in start-ups. Overall, 73% of companies will invest in capital goods, 61% in intangible assets, 43% in Advanced HMI devices or ergonomics-safety solutions and 30% in quality-sustainability systems. A quarter of the companies will take advantage of the benefits of the Plan by investing over one million euros: in detail, 17% say they want to invest up to 300 thousand euros, 8% between 300 and 500 thousand euros, 7% between 500 thousand and 1 million euro, another 7% between 1 and 1.5 million euro, 6% between 1.5 and 3 million euro, 13% over 3 million euro. There are also some indications to bring the Plan

closer to the needs of businesses: in particular, 29% suggest incentives for training courses about Industry 4.0 and 25% incentives for the recruitment necessary to fill the skills gap.

These are some of the results of the research of the Industry 4.0 Observatory of the School of Management of the Milan Polytechnic (www.osservatori.net) presented at the conference "Industry 4.0: the great opportunity for Italy", which was held at Milan at the Auditorium of Assolombarda. "The first cultural challenge, that of awareness on Industry 4.0, seems to have been won: Italy has a National Plan, the topic is at the center of the attention of the economic world and the level of knowledge among companies has risen considerably. In this context, the Italian market already shows double-digit growth and the Italian Industry 4.0 is experiencing a moment of great fervour" explains Alessandro Perego, Andrea Sianesi and Marco Taisch, Scientific Managers of the Industry 4.0 Observatory. The full impact of the 4.0 transformation will be between 10-15 years and strategies and roadmaps with foresight must be formulated. "The National Plan is carrying out a dual role of accelerator of transformation 4.0" continue Perego, Sianesi and Taisch : "On the one hand it is contributing to spreading greater knowledge of the subject, on the other it is setting in motion a virtuous mechanism of private investments and consumption growth." However, the fear remains that the wave of investments derives more from the fiscal opportunity than from a real awareness of the potentialities of the "Fourth industrial revolution". The Plan can act as a stimulus, but companies must not lose sight of the real competitive opportunity that Industry 4.0 represents. Speaking about technologies "The most important share of the Industry 4.0 market, or 63% equal to about 1 billion euro, is linked to the connectivity and acquisition projects of the Industrial Internet of things." Says Giovanni Miragliotta, Director of the Industry 4.0 Observatory, followed by Industrial Analytics (20%, equal to 330 million euros), Cloud Manufacturing (9%, 150 million euros) and Advanced Automation (autonomous and collaborative production and handling systems, with a share of 8% equal 120 million. "The interest in the Advanced Human Machine Interface (wearable and human-machine interfaces such as touch displays, 3D scanners, augmented reality displays) is growing, which for the moment still represents only 1% of the market. There are more than 800 applications 4.0 reported by the 241 companies responding to the Observatory survey, for an average 3.4 applications per company, distributed in the three areas of business processes: Smart Lifecycle (product development, life cycle management and management suppliers), Smart Supply Chain (physical and financial flow planning) and Smart Factory (production, logistics, maintenance, quality, safety and compliance with standards). In the Smart Factory, 38% of companies adopted Industrial IoT solutions and 33% of Industrial Analytics, but more than a quarter also invested in Advanced Automation (26%) and Advanced HMI (27%) solutions. In the Smart Supply Chain, 32%

of companies adopt Industrial Analytics solutions and 15% of Industrial IoT, while the use of cloud platforms is still low. In the Smart Lifecycle, Additive Manufacturing is central in the prototyping phases, but IoT, Analytics and Cloud applications are growing more, reaching levels of 20%. "With an average of 3.4 applications per company, the survey reveals the excellent vitality of Italian companies in Industry 4.0" continues Miragliotta, "But the situation is not homogeneous in terms of number and dynamics of applications, as well as for positioning compared to competitors: Industry 4.0 is becoming, already in this experimental phase, an element of differentiation between companies. Among the various technologies, Industrial IoT and Industrial Analytics are the lion's share, while among the processes the cornerstone remains the Smart Factory, but at last there are 20% adoption rates in the Smart Lifecycle and Smart Supply Chain ".

Regard Job & Skill 4.0 - The Industry 4.0 Observatory has identified over 100 technical skills necessary to define strategies, design, management of the processes and business models of Industry 4.0. The Italian companies consider the 4.0 skills important, but among all, the most important is the ability to "define a plan to adopt technologies for the improvement of production processes", on which less than half of the responding companies only 46% declares that he is sufficiently prepared. The "ability to digitally integrate business processes with customers and suppliers along the supply chain" is almost equally important, on which 54% of companies feel prepared, but in 75% of cases there is still an expansion through training, new hires or collaborations. "To truly meet the challenge of Industry 4.0, companies must equip themselves with the necessary skills, reviewing strategies and practices for selecting, hiring and developing human resources, as well as training plans and collaboration networks" comments Sergio Terzi, Director of the Industry Observatory 4.0.

The 4.0 skill considered most relevant by the companies is not at that simple because it requires to reconcile strategic business and technical perspective, considering the implications on the safety of the personnel, the cybersecurity, the privacy, the data entitlements and other legal aspects ". To equip the missing skills, 8% of companies planned to select new staff or start collaborations on the key skills of Industry 4.0, in particular to define the technology adoption plan (10%), for the analytical capacity, modelling and simulation of production data from sensors and devices (10%), for knowledge of sensors and IoT platforms for monitoring material flows (10%). On the other hand, the skills for training activities that are underway or planned in the next 18 months are mainly in the management of production: definition of the technology adoption plan for production processes (33%), analysis, modelling, production, data simulation (31%) and design of a predictive maintenance system (31%). The training courses will be held mainly through live classroom, but

among the innovative training approaches the most widespread method is that of online courses, both webinars and more complex e-learning systems. Rare, but also to be mentioned the use of virtual reality for the training of line operators. The standards for connecting machines and processes, The Manufacturing Execution System (MES) is the computerized system that has always been the instrument of interoperability in industrial automation. With Industry 4.0 it is evolving towards a more extensive vision, Manufacturing Operations Management (MOM), in which in addition to vertical integration between operational level and enterprise, the horizontal integration of production, maintenance, quality and logistics is increasingly important. "To build an effective MOM architecture, technological and organizational choices are necessary" explains Marco Macchi, Director of the Industry 4.0 Observatory. The evolution of company information systems requires the adaptation of machinery, monitoring systems and process control in the Shop Floor. Furthermore, new logics based on data openness and interoperability are necessary, overcoming the problems that this involves on machinery and sensors ". Companies must understand the opportunities offered by new technologies, contextualizing them in their business and in the sector they belong to. The Industry 4.0 Observatory has realized the DREAMY (Digital REadiness Assessment MaturitY model), a tool for the audit and check-up of the "readiness to digitization" which aims to guide manufacturing companies along the process of defining the own digital transformation roadmap. Starting from a subset of the model's questions, a self-assessment tool was created, that companies can use for free on-line to get an initial idea of their current state of maturity.

Regarding the start-ups: there are 245 internationally funded start-ups born between 2011 and 2015 active within the Industry 4.0, capable of raising total funding of over 2 billion dollars. The census carried out by the Industry 4.0 Observatory reveals a number of new businesses increased up to 15% compared to last year, of which about half offer Cloud and Analytics solutions (respectively 30% and 20%) and the other half is distributed among Industrial IoT, Advanced HMI, Advanced Automation and Additive Manufacturing.

In September 2016, MISE presented the 2017-2020 National Plan 'Industry 4.0'. The goal is to favour the adoption of new technologies and tools made available by the pervasive use of data and information, of computational technologies and data analysis, of new materials, components and systems totally digitized and connected. The program will be led by the Presidency of the Council of Ministers, jointly with six ministries and other institutions involved, such as the main Italian banks, Confindustria, the trade unions, some non-profit research foundations and various academic institutions. It mainly previews measures that operate with a "logic of technological neutrality", of

the "horizontal" type, aimed at acting on the factors enabling growth, the quality of investments and the workforce. Many measures provided for in the law budget 2017 fall within this plan. For the research purpose the tools analysed are: tax credits for R & D, Support for start-ups, Patent box and Hyper and super depreciation and New Sabatini.

4.2 Industry 4.0

The tools of the plan

- Hyper and super depreciation
 - Purpose:
 - Supporting and offering incentives to companies that invest in new capital goods, tangible assets and intangible assets (software and IT systems) for the technological and digital transformation of their production processes.
 - Definition:
 - Hyper-depreciation: for depreciation purposes, investments in new tangible assets, devices and technologies enabling companies' transformation to "Industria 4.0" standards will be valued at 250% of the investment value. Applies for outright purchases and lease purchase agreements.
 - Super-depreciation: for depreciation purposes, investments will be valued at 140% of the investment value. Applies for outright purchases and lease purchase agreements. Those benefiting from hyper-depreciation may in the future also apply the benefits to investments in intangible assets such as software and IT systems.
 - Accessibility:
 - It is automatically accessible when preparing financial statements and through self certification. Eligibility for tax benefits is satisfied when an order is placed and an advance payment of at least 20% is made by December 31, 2017, provided the goods are delivered by June 30, 2018.
 - For hyper-depreciation purposes, investments with a value of more than €500,000 per asset, must be supported by a sworn technical report prepared by an expert or engineer that is registered in the appropriate professional registers.
 -
- New Sabatini
 - Purpose:

- Supporting businesses requesting bank loans to invest in new capital goods, machinery, plant, factory equipment for use in production and digital technologies (hardware and software).
 - Definition:
 - Credit to innovation and development (SME focused);
 - Contribution partially covering interest paid by business on bank loans of between 20,000 and 2,000,000 euros, granted by banks approved by the Ministry of Economic Development, drawing either on a specific credit line of the Savings and Loans Fund (Cassa Depositi e Prestiti) or on ordinary reserves. The contribution is calculated on the basis of a conventional 5-year depreciation plan with an annual interest rate of 2.75% and is increased by 30% in the case of investment in “Industria 4.0” technologies.
 - Priority access to the Central Guarantee Fund, for a maximum of up to 80%.
 - Accessibility:
 - Businesses that are interested must present, by December 31, 2018, a bank or financial intermediary with a request for a loan and an application to access the grant, according to the model set forth in the ministerial memorandum.
 - The bank or financial intermediary will check the request, determine if the loan is to be approved, and send the Ministry a request to book the respective grant.
 - Within 5 business days from receiving the request, the Ministry will notify the bank or financial intermediary of the partial or total availability of funds. Requests for grants shall be processed on a first come first served basis as long as funds are available.
- Tax credit for R&D
 - Purpose:
 - Encouraging private investment in Research and Development for product and process innovation to ensure the competitiveness of enterprises in the future.
 - Definition:

- 50% tax credit on increases in Research and Development costs up to an annual ceiling of €20 million a year per beneficiary, calculated on the basis of the average expenditure on Research and Development in the years 2012-2014.
 - The tax credit can be used to cover a wide range of different taxes and contributions, even if companies report losses.
 - Applies to all expenditure on basic research, industrial research and experimental development: hiring of highly qualified and technically specialised employees, research agreements with universities, research institutes, enterprises, innovative startups and SMEs, depreciation on laboratory equipment and instrumentation, technical know-how and industrial property rights.
 - This measure is applicable to Research and Development expenditure borne in 2017-2020.
 - Accessibility:
 - Automatically when preparing financial statements and specifying expenditure in income tax returns (in section RU of the Unico tax return form).
 - There is an obligation to provide certified accounting documents.
- Patent Box
 - Purpose:
 - Making the Italian market more attractive to long-term domestic and international investors by offering a special rate of taxation for incomes deriving from the use of intellectual property rights.
 - Offering an incentive for bringing back to Italy intangible assets currently held abroad by Italian or foreign companies, while at the same time offering an incentive for keeping intangible assets in Italy rather than relocating them abroad.
 - Favouring investment in Research and Development.
 - Definition:

- An optional special taxation system applicable to income from use of intangible assets: industrial patent rights, registered trademarks, industrial designs and models, copyrighted know-how and software.
 - The special condition consists in a reduction of 50% in the corporate income tax (IRES) and regional production tax (IRAP) rates starting in 2017, on business income connected with direct or indirect use (or use on licence) of intangible assets in relation to third party counterparts or related counterparts (infragroup companies). The benefit is conditional to the taxpayer conducting Research and Development work connected with the development and maintenance of intangible assets.
 - Accessibility:
 - The option must be exercised in the tax return for the first fiscal year in which the party intends to opt to use of the benefit, and remains valid for five years starting on the year in which the revenue office (Agenzia delle Entrate) is notified. The benefit may be renewed for the same number of years, and is irrevocable.
 - In case of direct use of the intangible asset, it is obligatory to set up a prior agreement (a ruling agreement) with the revenue office to determine the methods to be applied to determine eligible income. The benefit becomes effective when the ruling agreement is completed.
 - The ruling agreement is optional in the case of indirect use of the intangible asset, and the benefit becomes effective when the option is exercised.
- Innovative startups and SMEs
 - Purpose:
 - Supporting innovative enterprises at all stages of their life cycle.
 - Sustaining the development of Italy's start-up ecosystem.
 - Spreading a new business culture based on teamwork, innovation and openness towards international markets
 - Definition:
 - A new online, free incorporation procedure.

- Exemption from regulations on dummy companies and companies reporting systematic losses.
 - Possibility for limited liability companies to issue tax-free stock options or work-for equity schemes.
 - Incentives to investment in risk capital: a 30% break on personal income tax for investments up to 1 million euros, or a 30% deduction from corporate income tax basis, up to 1,8 million euros
 - Free, simplified, fast-track access to the Guarantee Fund for SMEs.
 - Equity crowdfunding for raising new risk capital.
 - Italia Start-up Visa: a priority visa for innovative entrepreneurs from all over the world.
 - Possibility of transferring losses reported by start-ups to listed companies holding at least 20% of their shares.
 - In case of failure/bankruptcy: exemption from regular bankruptcy regulations.
 - In case of success: scale-ups can easily shift to the “innovative SME” status, keeping the key benefits
- Accessibility:
- By registering in the dedicated section of the Business Register, through an online self-certification in which applicants confirm that they fulfil the above-mentioned legal requirements. The innovative start up regime lasts no longer than 5 years from the date of incorporation.

Implementation channels

In December 2014, the MISE launched the "ICT-Digital Agenda" program for the financing of enabling technologies, financed by an ad hoc fund, the "Fund for sustainable growth". The same Fund will finance the "Sustainable Industry" plan, promoting projects for sustainable growth and the green economy.

Other technological programs. The program for National Technological Clusters was launched in 2012 with the aim of encouraging collaborations between companies, universities and public or private research bodies, active in the field of innovation. It focuses on eight technological areas²⁴.

In 2012 the Smart Cities program has involved companies, universities and public research organizations in innovative projects in the field of social innovation in nine strategic areas, in line with the Horizon 2020 European projects and the seven "Societal" Challenges " .

In 2017 the "Human Technopole" project is expected to start, i.e. the creation of a new institute of research on health, to be built in the Milan Expo 2015 area, with an estimated budget of around 130 millions of euros a year.

In the budget law for 2017, the government has also established a fund for infrastructure and investments, amounting to 1.9 billion euros, managed directly by the Prime Minister's Office (such Fund could also include financing for research and innovation costs).

Finally many autonomous projects were created by each institution at different levels (governmental and regional entities, municipalities, private associations etc..). I want to mention here one of those emerged in the municipality of Pescara where I live: The Charter of Pescara for sustainable industry is a planning document that incorporates the guidelines of European policies on theme of environmental sustainability applied to industry. The Regional Council approved the Charter of Pescara on the 21st of July 2016 containing the specification for membership defined together with companies, universities and social partners. Participation by the companies involved is voluntary and allows them to take advantage of certain facilitations such as: procedural simplifications, reduction of administrative, tax and tax burdens, financial facilities and supporting legislation. All companies with an operating office in Abruzzo region, accordingly to the Chamber of Commerce, in compliance with all the obligations provided by current legislation, may adhere to the Charter according to three levels of certification, based on environmental, social and economic sustainability requirements. Start-ups and companies that have presented an industrial settlement project can join with a slightly differentiated path.

Among the others we want to mention the following list of channels and concepts where Industry 4.0 take place:

- COMPETENCE CENTERS
- DIGITAL INNOVATION HUB
- LIGHTHOUSE COMPANIES
- CLUSTERS
- ACE – ALLOWANCE FOR CORPORATE EQUITY
- GUARANTEE FUND FOR SME's

- CONTRACT AND AGREEMENT FOR THE DEVELOPMENT

4.3 Presentation of the studied organization

COESUM

Coesum is an innovative third party manufacturing company, active in the field of prototyping and development of new products especially for plastics and metals. The know-how is aimed at collaboration with the customer to design and market new products; the main areas in which the company is active are: design, rapid prototyping, cad 3d design, in addition to additive manufacturing and advanced manufacturing. The company structure is an SME with family ownership. The company is a small business with an entrepreneur who performs administrative and management functions. The company is small but structured over time with an agile business model aimed at continuous innovation. The company operates in a technological district where there are companies similar in size and business model. Coesum is in close contact with these companies, influencing their behaviour and administrative practices and is in turn influenced too. The employees are mostly young specialists who do not need too much training on the issues of the 4.0 industry being prepared and having the skills and intentions to operate in this sector. The company has a strong focus on the customer that it follows in all phases of prototyping, from the study of the concept to production and distribution and promotion channels. The company's goal in the near future is to have a process integration that allows the customer to check the progress of the project requested in real time as if it would be inside the company physically. The context in which the company operates is a highly competitive context that involves the use of machines such as 3D printers that are highly expensive and which need for a high degree of maintenance and high costs in case of replacement. The speed of technology development leads to a fairly high replacement rate for these machines. For this reason, the incentives promoted by the Industry 4.0 plan were welcomed.

GENERAL DOORS

General Doors is a small and family-run company; the company managed to survive during the last crisis that hit the country, even if the volume of the demand is much lower and the supply chain has established itself to offset the narrowing of profit margins. The majority of the work is in fact in the supply to the final customer after having performed the steps (at least three) necessary for assembly

by third-party manufacturers. Many companies similar to The General Doors, have changed form and organizational model, in order to gain acceptance and legitimacy to market standards moving from a third party production to an integrated production, which is incentivized by the spirit of the reform. Despite the incentives provided by the national plan, the management was not able to undertake this transformation due to lack of liquidity and confidence in the recovery of the internal market. The owner in fact pointed out that the sector in which he has been operating for years is considered to be now highly competitive, that led to the general lowering of prices, that caused lowering the profit margin. In order to succeed in having the necessary power to make investments and stay on the market, 11 companies operating in the sector tried to equally participating to the creation of a newco. Despite the idea has been carefully studied and the 11 companies that had to participate in the company establishment agreed, at the time of implementation many of the companies involved withdrew. When it comes to investigate the reasons why, the owner of General Doors, said that in his opinion the withdraw from the project was due not to economic reasons or scepticism. According to the owner, in fact for the companies involved was difficult to give up part of the control they had on their business that was supposed to be shared in the new project.

For them it was better to settle for little profit managed by themselves than to have a bit more without, however, being able to independently make decisions.

The biggest obstacle according to my interlocutor to the success of the initiative is propitious in the culture of time: the ongoing change brought by new technologies is not accepted for several reasons, mainly incapability and mental allegiance, from Italian entrepreneurial body that is mainly made up of micro enterprises with few employees where the owner is the self-made man who decides everything in autonomy. For reasons of age and as already mentioned of "culture" (refer to culture in the institutional change), the small entrepreneur in the traditional sectors is not interested in a change perceived as radical. The hope is that the new generations will soon be able to access the management of the production system, both through the generational transition and by setting up new companies and start-ups. From this point of view, according to my interlocutor, the reform is lacking. Funding and tax relief are provided for those who choose to set up a new company but there are constraints and procedures that do not facilitate; in addition, the provision risk capital, is often entrusted to banks, which by their nature have a prudent and conservative attitude that contrasts with the spirit of the start-up. Moreover, the average time for the process of disbursement of funds at the traditional bank is incompatible with the speed of the context in which start-ups move today. More channels like seed, business angels, venture capitals or perhaps even crowdfunding and ICO should be developed much more.

The owner also had the problem of generational turnover; he is about to retire and the sons who have worked with him in the company for several years, should take the baton. Given the failure of the aggregation project, the owner then worked out an exit strategy trying to set up a new company in a related sector but different from that of automatic doors, in which the General Doors operates. It can thus maintain part of the acquired know-how and start over with a new management that will be entrusted to the second generation. Once the company is set up, it will start with investments in plants and machinery and software to create a company that is as automated and integrated as possible, albeit small in size.

GELDI

Geldi is a distribution of food consumption products in the HORECA sector. they are a company that makes production and distribution and are trying to de-seasonalize production by introducing new products to increase the range. The turnover is around 20 million and up by eight percent compared to the previous year, thanks to a policy of investments in commercial expansion and customer service orientation. It is expected to reach 50 million over the next 5-7 years. The property is familiar and in the second generation. It is very open to the outside context, assuming professional figures able to make the company grow in the light of organizational and technological challenges. “I am an example of this because I joined the company as an employee and then I reached the position of CIO” said the Digital executive officer. The industry 4.0 is an initiative promoted by the Confindustria professional body, in which the CIO take an active role. The motivations for the adoption of incentives were the fact that the management has launched the industrial plan that needed necessary investment for logistics in view of expansion of the commercial area, in fact, investments were planned regardless of whether it was launched or not the plan by the government. The subjects involved by the management were the CFO, the managing director and the CIO, while outside the company were mainly involved banks and external consultants, but at the moment the actors in the supply chain have not yet been involved customers, even if there are billing projects in the cloud and then integration on the billing side of the contacts between customer and supplier favoured by disintermediation and ease of use due to digitalization. The initiatory role of the change was to switch the ERP software from a classic one to an integrated SAP Business One Hana management system. This led to re-discussing the rules and routines and the roles of people who had to partially adapt their behaviour to the novelties that were created around the adoption of new tools. An important role was played by the training, in fact the employees were trained already before the entry of the new instruments with internal and external

courses made by specialized consultants. The transition was quite good with some understandable problems, but this is due to the great contribution that the given and ongoing training provided. In fact, the company's development plan is to gradually continue to invest in new technologies and processes and to continue to training employees in order to enable them to use these technologies. A very important tool for funding training is the interprofessional fund, which can be used also through co-financing. The organizational model therefore changed, also changing the roles at the level of top management as following the business development plan and the adoption of new technologies, although in time continuity, the role of CIO was established, which will have an ever-increasing importance in the future, both inside the company and in the relationship with the external stakeholders. New hiring's and new investments have been planned which, although not started with the reform, have benefited from that and given new input to what has already been taken into account in company planning. The reform in question therefore played an important role, even if not initiatory, and was welcomed with great positivity by top management, which has played the role of a subject that moves the shift of new institutional logics in promoting and to spread the change brought about by the institution.

3LOGIC MK

3Logic mk is an information technology company that develops tailor-made solutions to meet the needs of customers regarding the technologies used by the companies. In particular, 3Logic operates in the following sectors: business intelligence, enterprise architecture, internet of things, mobile applications, system integration and digitalization processes. 3Logic was born recently and employs a staff of about fifteen professionals, mostly young; they claim to be seen as artisan workshop where knowledge is built. The company's vision is "Things must be done well". In developing their products, 3Logic has put in place a system of stakeholders and partners that cooperate with it not only operationally but also sharing knowledge and on the dissemination of digital culture. In particular, the company is a CAN (association of chambers of commerce) member active not only in organizing conferences on new technologies and Industry 4.0, but together with other 4 local SMEs, has formed a European association based in Brussels called Next European Industry (NExtIN). NExtIN is a non-profit association with the aim of promoting and accelerating the diffusion of digital technologies within the European industrial system, transferring information and knowledge. Tiziana Lombardo, project manager of the group said: "The association will be active in Europe and will establish a dialogue with the European Commission to promote the implementation of policies aimed at encouraging the spread of the European Industry 4.0 and its future developments." My interviewee Tiziana tells me that as a IT company, they approached

Industry 4.0 project before it was launched in Italy, as they had a client who worked in Germany where the project Industry 4.0 was early launched, that commissioned to 3Logic mk a project. Afterwards they continued to monitor the evolution at European level through their own consultants, so that when the national industry 4.0 plan was launched in Italy 3Logic mk was ready both in terms of knowledge and operational know-how having only to incorporate the technical-specific content of the Italian version's implementation. In fact, since the entry into force of the plan 3Logic mk ensures that in developing client's projects the technical specifications are as widely compatible as possible with the incentives and the spirit of the national Industry 4.0 plan; Tiziana tells me that, during the contact with customers in the commercial phase, if the clients are not aware of the 4.0 industry plan, she will tell them about the incentives that best suit their needs by providing them assistance service. This duty goes far beyond the usual supplier-customer commercial dynamics but she assured me that it's worthy. The service has considerable benefits for the client company that, in addition to obtaining the desired customized solution, benefits from discounts and economic and tax concessions resulting in a greater degree of customer satisfaction. On the other hand the assistance service contribute to the development of the cultural industry context where the 3Logic mk operates. When it comes to the incentives used by 3Logic mk I can name the new Sabatini and the Super and Iper depreciation, but above all the bonuses regarding research and development, as the company mainly deals with developing solutions for customers combining existing tools with in-house products, which can be both hardware and software. The already existing tools are purchased using the incentives, while the in-house products are created through the research and development function for which a tax credit is expected equal to 50% of the average costs incurred in a three-year period. This allows 3Logic mk combining the different incentives to be competitive in the offer to the customer and to create works that otherwise would have required a very large amount of capital. The strategy followed by the company is to be visible on the market through commercial contact with customers that have specific needs, assuming the goal of solving the customer's practical problems. Projects have a very wide range that goes from tracking things and people through geolocation to the composition of smart plants and warehouses, all having the common denominator of the use and implementation of new technologies. In particular, 3Logic mk has no fixed customers, mainly dealing with one shot projects, so that a project generally corresponds to a customer. The interaction between the two companies (customer and supplier) takes place through reference persons who are responsible for following the whole project from the beginning to the last billing stage. This means that the quality of the interaction is guaranteed by the fact that the reference people of the two companies collaborate closely by assuming the responsibilities of the various processes in first person even if they can rely on many

other professionals and technical-operational figures. The final billing phase takes place only after the customer has been able to verify that the product complies with the requirements, through the acceptance of quality documentation, and is therefore able to solve the practical problem for which it was addressed at 3Logic mk. The objectives that the company has proposed are those of the acquisition of market shares, since 3Logic mk is a newly established company. The strategy adopted is consistent with the objectives as it aims to create a reputation of the company through customer satisfaction, which is assured precisely through its business model practices: the resolution of practical problems, close collaborative contact with the customer and payment only upon acceptance of the quality documentation. This leads the satisfied customer to give a positive judgment on 3Logic mk's job both through word of mouth and through social networks. The means that 3Logic mk uses for the implementation of the strategy are: the documentation countersigned by the customer for each step of the project that allows 3Logic mk to follow the implementation of the project step by step with the approval of the customer; there is also a close relationship with European authorities that very often grant funds for European projects. This allows 3Logic mk to be always updated on the topics for which these loans are given and therefore to provide the customers with the best solutions to specific problems as well as to get in touch with potential new customers. The other parties involved are the suppliers that 3Logic mk uses to get the procurement of components and finished products and consultants who play a fundamental role in providing opinions and indications both in terms of quality and technicalities; finally we can name the unions regarding the respect of the rights of workers that are the first users of new technologies. The company's employees are mostly young professionals who are experts in new technologies. 3Logic mk has focused on developing a high degree of staff involvement by creating a rather flat structure whose top is identifiable with the members and the employees have quite the same hierarchical level. This is also made possible by the business model that requires each person to have specific skills in a particular field of innovation technology. The business model also requires that the projects are followed entirely by a single project manager or team of project managers. This allows the management to decentralize duties and responsibilities at all levels.

The Industry 4.0 plan was of tremendous impact for 3Logic mk, as the company proceeded step by step with the plan since its creation, becoming more and more important with the greater diffusion of the plan at European level. Till the present date almost all the projects in which 3Logic mk is actually involved include the use of incentives linked to the Industry 4.0 plan. In recent years, thanks also to the dissemination of the trade associations (chambers of commerce and association of industrial companies) the projects that 3Logic mk has been commissioned have increased. The best

part of the plan according to my interlocutor was the prompt reaction by which the government reacted to the initiative initially implemented in other European countries; for a country like ours, it is not at all obvious to receive changes of this magnitude so rapidly.

And in fact, the less positive note, according to my interlocutor, is that the acknowledgment has taken place in a non-homogeneous manner. Despite the contacts received from industry associations, there were very few SMEs that had the need to request incentives from the 4.0 industry plan. This fact in Tiziana's opinion is due to the fact that the crisis has hit above all the SMEs, therefore although they would need to make investments, they do not have the liquidity to anticipate the money. In cases where the credit system worked as funds provider, however, there could have been a lack of confidence in making debt to invest without seeing favourable economic perspectives in the medium term. Among the other things the benefits of this plan can be found not only for the Italian industry but for the country in general, as there is still a digital divide to be filled with Europe and as told by my interlocutor to foster a culture related to these themes also means investments in infrastructures and creating new opportunities.

For this reason, Tiziana concludes that it would be useful for the next governments to continue with reforms that have the spirit of the Industry 4.0 plan, just because it contributes to create the trust atmosphere necessary for its own success. Obviously it takes a while.

4.4 Reliability

While researching for the case description, I became to get deep understanding on the cases. The interviews, academic articles, historical books, reports, briefings, statements were all studied. An extensive secondary data study was performed to overcome subjectivity and to establish the real-life context.

5 Results

This chapter describes the results extracted from the cases studied. The actions described within the cases description are appointed to forms of institutional pressures and strategic responses.

Significant results are presented in view of institutional theory. The results are presented in a more understandable graphic mode and results are described. Secondly, a presentation of important actions and their results are described from different perspectives.

5.1 Data analysis

This analysis of the data explains the method for the analysis of the case description. To begin an analysis of the data is performed by carefully listen to the recordings of interviews and highlighting the most relevant parts. Since the description of the cases was written in narrative way a need for a

more structured format of data is provided in this section. Data analysis furnishes examples of how the events are reorganized as institutional pressures and strategic responses and it describes the method to classify the principal themes inside the case description.

Finally, this analysis of the data clarifies the methods applied that could improve the reliability of the results. All the selected academic articles have been examined in advance and filtrates on the subjectivity

Pressures

<i>Company name</i>	<i>Institutional pressures</i>			
	<i>Regulative p.</i>	<i>Professional p.</i>	<i>Social p.</i>	<i>Mimetic p.</i>
<i>GELDI</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
<i>COESUM</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
<i>GENERAL DOORS</i>	<i>x</i>	-	<i>x</i>	<i>x</i>
<i>3LOGIC MK</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>

Tools utilized

<i>Company name</i>	<i>Tools adopted</i>			
	<i>Hyper and super depreciation</i>	<i>New Sabatini</i>	<i>Tax credit for R&D</i>	<i>Patent box</i>
<i>GELDI</i>	<i>x</i>	<i>x</i>	-	-
<i>COESUM</i>	<i>x</i>	-	-	-
<i>GENERAL DOORS</i>	-	-	-	-
<i>3LOGIC MK</i>	<i>x</i>	<i>X</i>	<i>x</i>	-

Perspective

In order to identify the appropriateness of the response we choose to highlight the main points that are relevant for the national industrial plan 4.0 issued for the period 2017-2020. The plan is divided in five directives: three of them (the ones in yellow in the picture below) are key directives and are related to the core of the project: the promotion and support to innovation in the private sector; these directives that for the analysis purpose we call perspectives are: Innovative investments, professional training, governance and awareness; we choose to split governance and awareness because we think are different concepts both relevant for our research analysis. The other two directives are accompanying directives and are the useful concepts that the government have to

implement by itself. These directives are: enabling infrastructure and public supporting tools. These concepts are of limited relevance for the research purpose because they are the exclusive prerogative of the government, therefore not including any kind of active action by the private companies. In the next paragraph in order to verify the appropriateness of the responses with the aim of the plan we will apply the four perspectives reported as key directives. If all perspectives would be analysed together, the results of an exerted institutional pressure and used response strategy might not be relevant to each other. So this perspective are treated one by one for every single case. In order to study the interactions between the different pressure, a paragraph, later in the work, will discuss the relationship among couple of pressure forces. Is important to notice that many other issues are related to the plan Industry 4.0 but in this work, for clarity and usefulness purpose we choose to highlight just the most important based on the strategic intervention guidelines as showed in the picture below.

CONFINDUSTRIA **INDUSTRY 4.0**
#PREPARATI AL FUTURO

Piano nazionale Industria 4.0 2017-2020

Direttrici strategiche di intervento

Direttrici chiave

- Investimenti innovativi**
 - Incentivare gli investimenti privati su tecnologie e beni I4.0
 - Aumentare la spesa privata in Ricerca, Sviluppo e Innovazione
 - Rafforzare la finanza a supporto di I4.0, VC e start-up
- Competenze**
 - Diffondere la cultura I4.0 attraverso Scuola Digitale e Alternanza Scuola Lavoro
 - Sviluppare le competenze I4.0 attraverso percorsi Universitari e Istituti Tecnici Superiori dedicati
 - Finanziare la ricerca I4.0 potenziando i Cluster e i dottorati
 - Creare Competence Center e Digital Innovation Hub
- Infrastrutture abilitanti**
 - Assicurare adeguate infrastrutture di rete (Piano Banda Ultra Larga)
 - Collaborare alla definizione di standard e criteri di interoperabilità IoT
- Strumenti pubblici di supporto**
 - Garantire gli investimenti privati
 - Supportare i grandi investimenti innovativi
 - Rafforzare e innovare il presidio di mercati internazionali
 - Supportare lo scambio salario-produttività attraverso la contrattazione decentrata aziendale

Governance e awareness

- Sensibilizzare sull'importanza dell'I4.0 e creare la governance pubblico privata

IN COLLABORAZIONE CON
SI Fonte: Cabina di Regia Industria 4.0
FCORPORATI CONFINDUSTRIA

Responses

Company name	Perspective			
	Innovative investments	Professional training	Governance	Awareness
GELDI	Acquiesce resp.	Acquiesce resp.	Acquiesce resp.	Acquiesce resp.
COESUM	Acquiesce resp.	Compromise	-	Acquiesce resp.

<i>GENERAL DOORS</i>	-	-	-	<i>Compromise</i>
<i>3LOGIC MK</i>	<i>Acquiesce resp.</i>	<i>Acquiesce resp.</i>	<i>Acquiesce resp.</i>	<i>Acquiesce resp.</i>

5.2 Discussion of the results

In this qualitative and explorative research, four case studies were analysed in the hope of providing new insights to the institutional theory. The analysis revealed a number of interesting results. This chapter offers an integration of the results with the theory that was used to provide the basis for this research work. In particular, the objective of this chapter is to direct attention to contact points or extreme divergence points with applied theory. This study has produced results that largely confirm the theory treated, albeit with the due exceptions that are mostly caused by the specificity of the individual cases (Burns and Scapens 2000). In any case, some interesting new ideas of reflection emerged precisely from the specific case studies treated, confirming not only the congruence of the theory but also the validity of the chosen methodological model, i.e. the qualitative research. The chapter will deal first with the general results and then with the results that emerged for the individual case studies.

5.3 General results

In this section a number of more general results will be discussed that occur across multiple issues. First some general result concerning the pressures on the companies involved in the reform Enterprise 4.0 will be discussed. Then the chapter will discuss the results about the response that the companies actually present to the pressures exerted by the various actors involved in the reform. Finally a graphical link between pressures and responses is presented.

5.4 Institutional pressures

In this section the most important general results concerning institutional pressures will be discussed. First the most important relations between institutional pressures will be discussed. Note that there are other relations between pressures as well but only the most important forces exerted in my humble opinion are discussed. In the second place the specific pressures exerted in each case study will be graphically presented and discussed.

5.5 Relations between institutional pressures

The 2008 crisis, the so-called Lehman Brothers crisis, has caused considerable damage to the Italian market; many companies have failed and many others have found themselves in serious difficulties.

For Italy as for many other European countries, this was the worst recession since the second world war and the national GDP has decreased by more than ten percentage points in the period 2009-2016, and it is still far away from recovery (World Bank). The crisis has been underestimated by the Italian institutional system; the prolongation of the recession and the lack of promptness of response in the first period by the institutions, produced a concentration in the domestic market due to the exit from the market of many companies, especially small ones that wasn't able to maintain the current production levels given the fall in internal demand. Reforms and fiscal stimulus measures were implemented. The reform that is the object of this thesis is part of a broader framework of stimuli to the economy. However, the technological process had for some time shown its usefulness in improving the companies that had the availability and the capacity to innovate the processes and the organizational forms. The flattening of profit margins due to this competition has contributed to the causes of depression in the market, given the poor attitude to reinvestment caused by the uncertain general economic future prospects. Another problematic factor was the man-to-machine replacement rate that especially with the advent of innovations such as Cloud, Artificial Intelligence, machine learning and robotization was much faster than in the past. Many companies, however, have managed to survive and also to obtain better results thanks to a wise adoption of these new technologies or in any case to a renewal of the business model or organizational system that contemplates the adoption of innovative technologies. With this in mind, the reform re-launches the role of the institutions that have taken a precise role in the aforementioned debate. Thanks also to the coordination with initiatives promoted by the European Union, the Italian Government as an institution by the hand of the Minister of economic development has promoted an initiative aimed at strengthening the skills and competences of companies that had already embarked on a path of technological innovation and bringing the remaining to face a change that by the words of the minister himself has become indispensable if Italian companies want to compete in a globally high technologic context. With regard to the internal market this reform brings benefits even higher than the expectations of the government itself, as the increase in sales of capital goods such as plant and machinery of which Italy is among the world leaders has increased by about 13% in the first year (Ministry of Economic development, 2018), much more than Germany, the European country's leader. The government, in fact shaken by the strong pressures on the economic recovery, has been motivated to elaborate a series of measures in the form of laws and regulations. Perhaps the most important is the reform investigated in this research: Industry 4.0. These laws have enforced a regulative or coercive pressure on the companies which has been accompanied by social pressure exercised by professional workers and clients.

An issue raised by the experts was about the maturity of the previous machinery park that was one of the oldest in Europe by mean. Moreover, there was issues about the regulation and bureaucracy in the economic field and also about the role that professional body have to take relating to the government and the economic field. In brief the suggestions about future regulation of industry experts and professional bodies serve as input for the Italian government's formulation of new regulation. From these examples it becomes clear that the findings and opinions of experts that exert professional normative pressure provide the Italian government with input which serves as a foundation of the regulative pressure. Finally, there is a relation between professional normative pressure and social normative pressure. The social normative pressure of the working force and the market and those who affected is mainly filtered by the professional bodies in which these categories are grouped together the unions and the different professional bodies: entrepreneurs, consultants, lawyers, managers etc. To large extent the professional normative pressure is exerted by experts and professional bodies that have the power to influence the business context about the appropriateness of the reform.

Since the reform was firstly released in September 2016 and entered into force, however, not too long ago, the mimetic pressure due to the effects of the reform is, in our opinion, still rather limited. However, the relationship between regulative pressures and mimetic pressures is among the declared objectives of the reformers. In fact, the goal of the reform is precisely to demonstrate that new organizational and business structures respond perfectly to the requests coming from the market. This reform has the explicit purpose of fostering the dissemination of these best practices and best tools by promoting an active role of the company towards change, in order to create a homogeneous field of companies that can dialogue according to new paradigms. The instruments included in the plan tend to create a greater tendency towards the growth in size of the Italian entrepreneurial system which is, composed of 98 percent of small and very small companies. In addition, the plan explicitly promoted FARO companies, role models of companies that have positively responded to the plan and therefore are examples for companies wishing to undertake this path. The relationship between social normative pressures and mimetic pressures is, in our opinion, the strongest, as already mentioned the trend towards digitalization and the adoption of new technologies has been a trend that has been in place for a long time and only strengthened by the crisis. The reform in question aims to speed up the rate of adoption. This trend therefore has an intrinsic strength and permeates almost all aspects of daily life. Simply think about of the social profile of today's businesses, which is largely conveyed through the Internet and social media. Nowadays these tools give clients the possibility of having an updated and rather complete image of

the company. This is in fact exerting a pressure to meet increasingly high-quality standards of reputation and communication, in some case decreeing the end of the company when it does not conform to these standards. Furthermore, all the media, not only the new media have the important function of conveying values and concepts of innovation (shared values and beliefs) and giving visibility to the FARO, cases of success, to which other companies can aspire to conform.

The relationship between regulations for professional pressures and mimetic pressures is very close as some professional bodies, such as those of entrepreneurs (Confindustria) are directly involved in the reform as they have given the input, have contributed to provide information and opinions through insiders and experts (consultants), have also contributed to spread the promotion on the territory together with members of associations and academy (seminars, conventions, purpose associations, vehicles and dedicated services companies); finally, it is often the professional workers that are the end-users (managers, business studies, trainers, entrepreneurs). Precisely because of the multiplicity of subjects involved and because of the role that these often play in several institutional groups or organizations, on a theoretical level it seems that there is a greater speed of diffusion and therefore homogenization by mimetic pressure. This relationship is therefore very close but as already noted earlier in this case, the professional normative pressure act as a filter between the coercive pressure exerted by the Italian government and the organizations that respond. This tendency exists in different degrees in relationships with all other types of pressures.

5.6 Institutional pressures: case analysis

In the figures below a schematic model is presented of the most important relations between pressures that were found in these cases. The size of the pressures box represents the relevance of each pressure as a part of the total picture while the arrows represent the direction of the pressures.

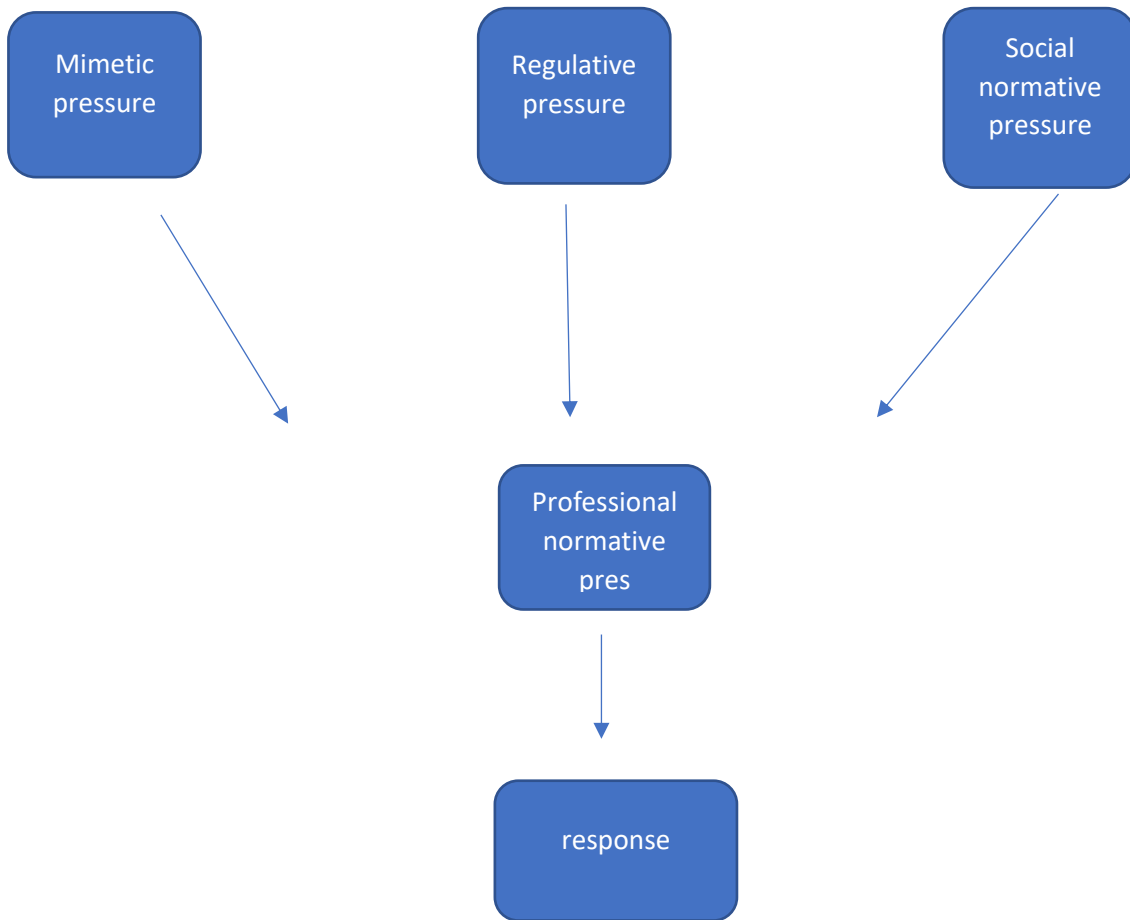
GELDI

Geldi is subjected in a very similar manner to all the four types of pressure listed in the descriptive part of the elaborate, with the particularity that the professional normative pressure exerts an important mediator role:

- Mimetic pressure: the company has always felt the need to comply by being actively enclosed in the local production context. The need to comply due to mimetic pressure expounded by the productive context, has not achieved the sole result of maintaining a passive homogenization, in fact, according to what reported in the literature, change at the

organizational level is a process of stability and change often started by internal mechanisms within the company. The strength of mimetic pressure is evident from the fact that the company's management had planned substantial investments in technology and innovation long time before the reform came into force.

- **Regulative pressure:** the company feels the pressure as well as the objectives of the reform and is quite aligned with it. Albeit it is true that the investments were already foreseen by the business plan before the effectiveness of the reform, at the same time one of the objectives of the reform is to boost companies that have already embarked on a path of technological innovation as well as to bring innovation into those companies that did not do it.
- **Social normative pressure:** the company has a very demanding clients who prefers quality and transparency, making it notice to the company both through product orders and feedback on the corporate website and the various social media in which the company is active. These are the pressures / reasons for which the company has implemented new integrated order and warehouse management systems. The company prepared a series of initiatives aimed at opening the company to the public in order to meet customers' quality and transparency needs.
- **Professional normative pressure:** the company is very linked to professional bodies such as Confindustria, which is one of the main promoters of the reform, both at the organization level and at the individual level: CIO, CFO are active members of Confindustria. The pressure is exerted mainly by Confindustria, which requested formal adherence to the plan, but most of all, by training and active dissemination of the plan in such a way as to reach the widest number of subjects even those not enrolled in professional associations. The importance of this type of pressure in this specific case is very important, above mostly because it conveys and mediates all the other types of pressure exerting a cohesive and orderly drive towards change. This is consistent with the literature that sees change being facilitated where the organization has influence on its network and where there is a strong role of professional bodies

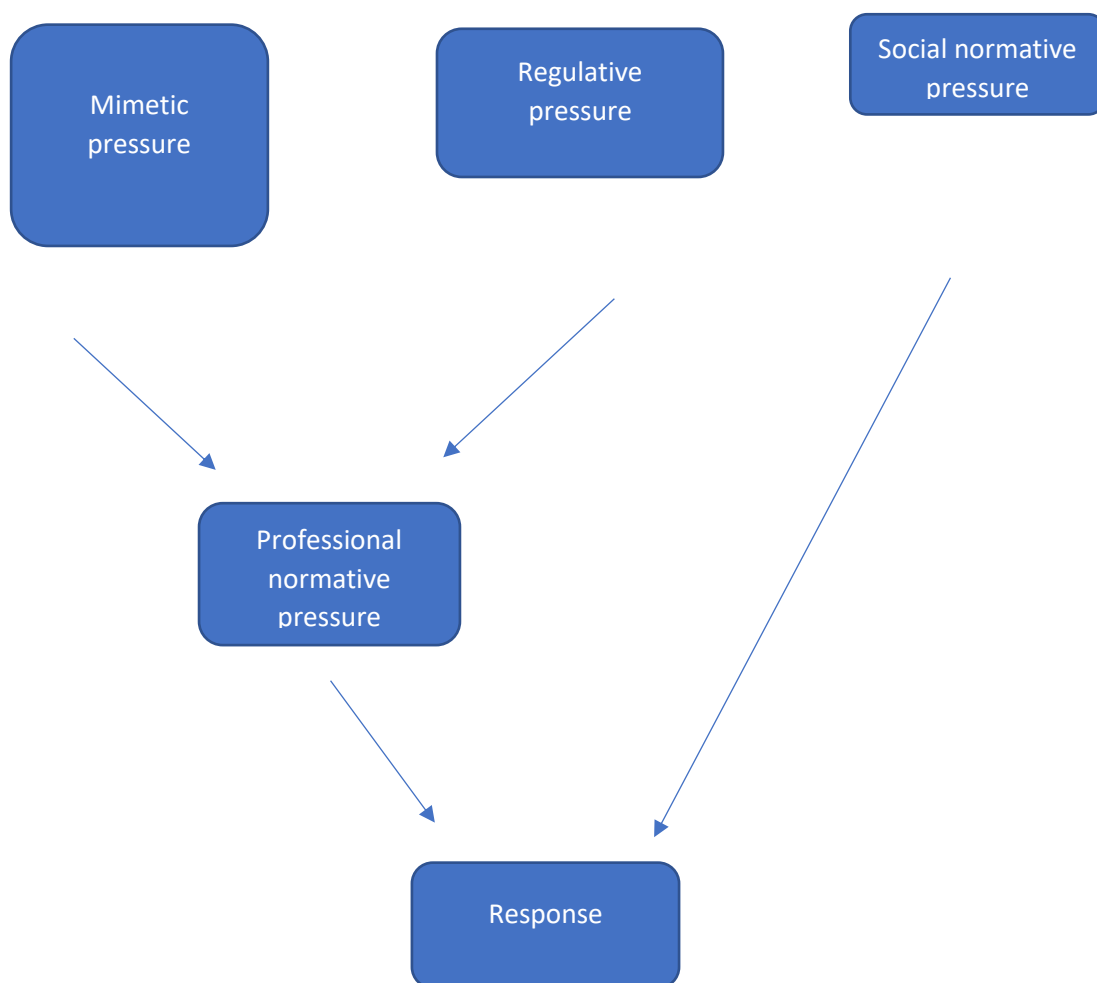


COESUM

Coesum is the case that presents the amplest degree of pressures and responses, some stronger and others less aligned, but also in this case the professional bodies play an important role, in this case a role of active diffusion.

- Mimetic pressure: the company being part of a small production district focused on additive and advanced manufacturing has particularly felt the mimetic pressure. The integration of the company with the production district has not been the initiator of change though.
- Regulative pressure: The initiator element has instead been the pressure exerted by the Italian government's plan as the sector in which the company operates is highly innovative and the technology in this industry has a very high renewal rate with replacement high costs. The pressure provided by the incentives provided by the plan has facilitated the process of change which, was not considered in such a short time.

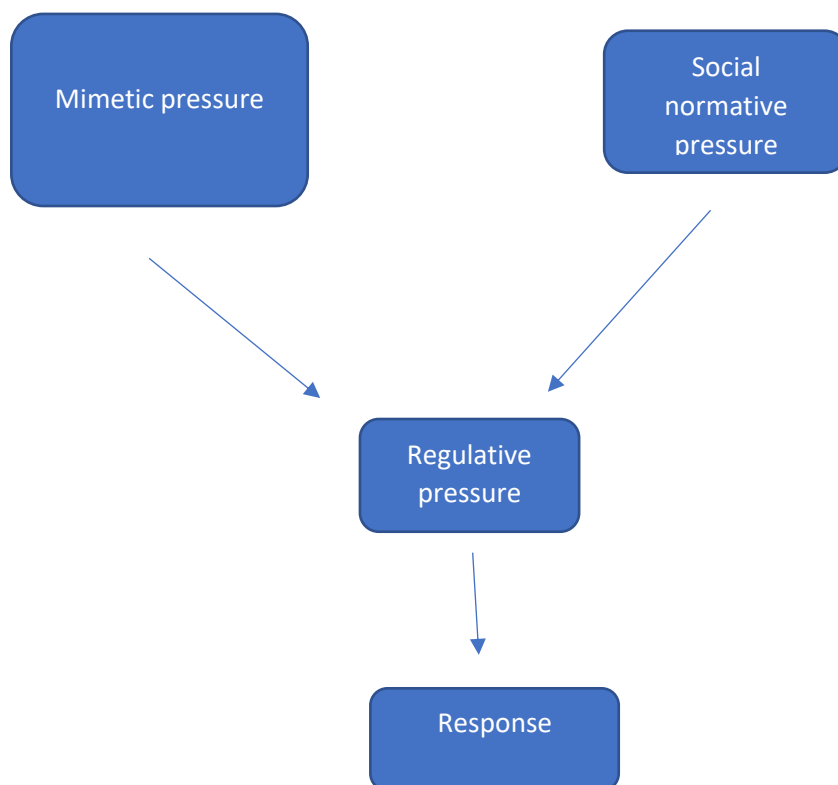
- Social normative pressure: this type of pressure is not very strong and concern mainly with employees. Because of the highly skilled employees that are able to use the latest machinery there have been weak pressures for professional training.
- Professional pressure standards: Also in this case the company is very linked to professional bodies and in particular Confindustria, which is one of the main promoters of the reform, both at the organization level and at the level of experts employed in the company: sales manager has been called from to perform a lecture class about additive manufacturing in meeting organized by Confindustria, creating a specialized network with other companies in the sector, not just companies but also institutions.



GENERAL DOORS

General Doors is subject to few but extremely strong pressures. The peculiarity in this case study is that the company is not influenced by professional normative pressure because General Doors is not part of the institutional associative world.

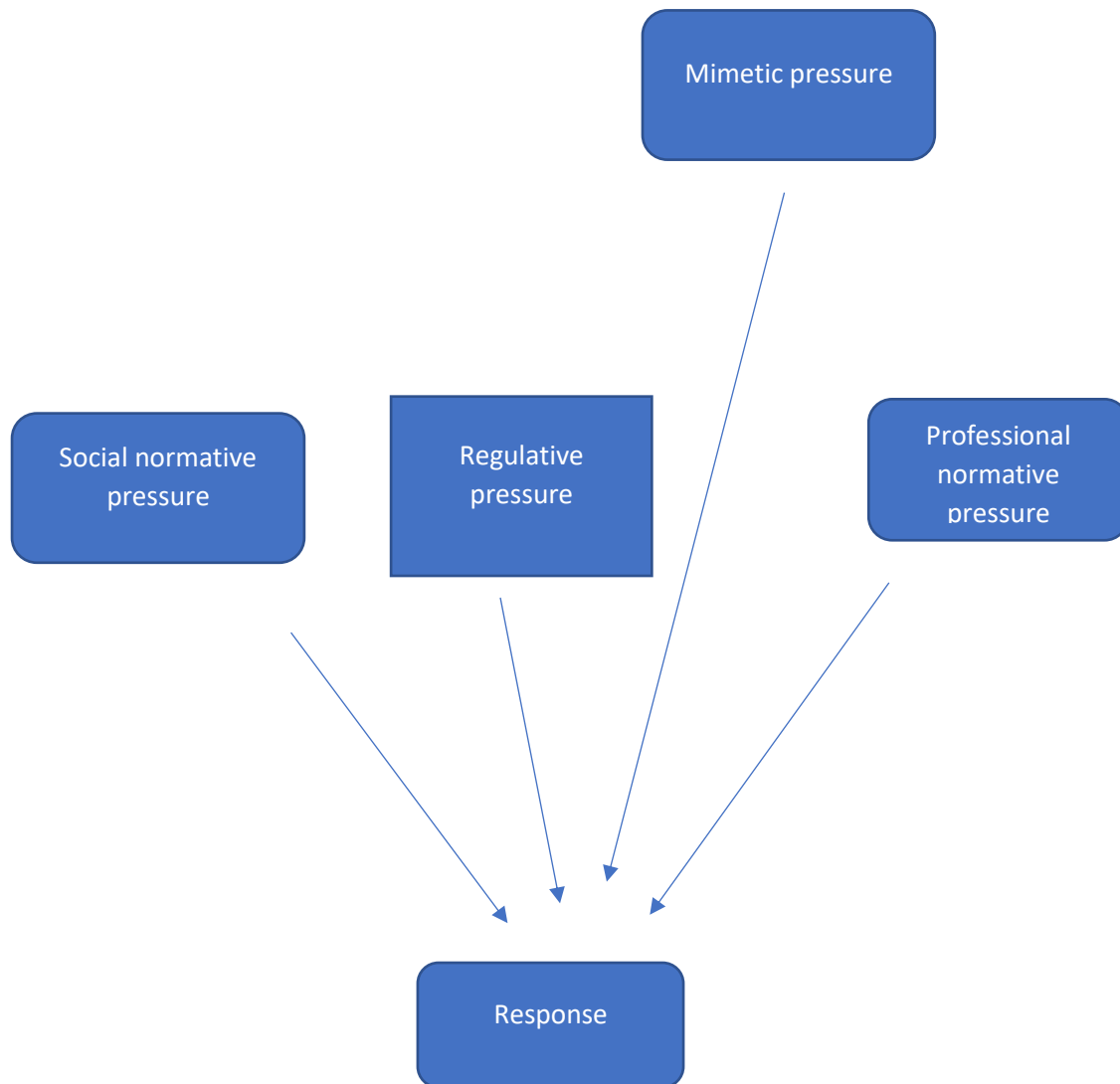
- **Mimetic pressure:** the company tried to obtain legitimacy in the attempt to don't succumb to market dynamics. The owner tried to consociate several companies operating in the same area and to integrate the production chain complying of the reform. The attempt to mimetic isomorphism has turned into a failure due to cultural factors and lack of figures such as institutional entrepreneurship (Battilana, Leca and Boxenbaum 2009).
- **Social normative pressure:** the company bears the pressure of the generational transition to the top management. This kind of pressure is not very strong but combined with mimetic pressure leads to urgent responses that could lead to drastic changes. In this case the type of pressure also has an enabler role as it leads to the awareness that a change of mentality (shift in institutional logics) is necessary to fully embrace the change.
- **Regulative pressure:** the company has seen this type of pressure as a synthesis of the two most basic pressures: mimetic pressure and social normative pressure. The established internal rules and routines of the organizations (the Burns and Scapens 2000 rules and routines) that make up the field did not allow compliance with the reform, even if in a transversal manner (Burns and Scapens 2000 incapability and mental allegiance).



3LOGIC MK

3Logic mk è sottoposta a diversi tipi di pressioni

- **Mimetic pressure:** 3Logic mk is a new established company born in the same period in which the reform was launched. The company's goal is to help companies to solve problems related to the use of new technologies. In the Italian entrepreneurial context, already lacking technological companies, 3Logic is situated among the small and medium-sized enterprises that are the least innovative ones. So, it cannot be said that competitors exert a strong mimetic pressure, and therefore mimetic pressure is exerted on 3Logic mk by the context, not by the competitors. In any case is the weaker among the pressures exerted on 3Logic mk.
- **Regulative pressure:** regulative pressure was not the initial factor for 3Logic mk because the company had a technological nature and a mission to spread the use of technologies in the companies. However, the reform had a huge impact on the activities of 3Logic as it helped to finance the company's investments and increased revenues significantly. In fact, the company benefited from the incentives included in the reform and was able to sell its products to customers on advantageous conditions. Furthermore, the spread of the culture of innovation in the Italian business landscape has meant that 3Logic mk continues to develop knowledge and skills that are the core business of 3Logic mk.
- **Social normative pressure:** this type of pressure is strong enough because intrinsically linked to the problems related to technology; in fact, the pressure in this area derives from subjects such as the trade unions who defend workers' rights who feel threatened by certain types of technological innovation, some private associations that defend the status quo and the local politics that are not always able to grasp the advantages of change.
- **Professional pressure standards:** 3Logic mk is registered in various state-owned associations which, in line with the directives of the Ministry of Economics, promote its contents and guidelines. Furthermore, in order to be in the forefront, 3Logic mk has created with other partners an association based in Brussels, in close contact with European Commission bodies to intercept the news regarding future projects at European level. Finally, almost all 3Logic mk employees are certified professionals with European or national certification bodies in roles such as project managers or project engineers.



5.7 Strategic Responses

First of all, it is remarkable to observe that organizations in the sample uses a multitude of very differing responses to address all the different types of pressure that are exerted within the context of the reform.

The companies largely responded with acquiesce or compromise. Only one has responded with avoid. If we analyse individual cases, we can say that Geldi has responded with acquiesce since, in addition to using the greatest number of instruments envisaged by the reform, he has fully implemented the reform's rationale, which has the objective of developing the company over the

medium to long term. It has invested in tangible and intangible assets with a view of commercial development in the near future. It has invested in company training to allow a conscious use of the innovative tools inserted in the company. The organizational structure changed in order to better respond to the needs of the context. They mobilized the management structure, by settling the role of Chief innovation officer with his own department, and accepted the challenges of innovation by implementing a new information system sustained by the last version of a popular ERP like SAP Business One Hana that lead to changes in the organizational structure due to the integration of many internal process previously performed by a bunch of different software. They also promoted the culture of innovation and change inside the company by organizing events and outside the company by participating to events organized by other actors involved. They fostered exchanges and feedback regarding the reform, this fact was facilitated by the active role that some managers maintained in other institutions, like the professional bodies. In a nutshell, it fully understood the spirit of the reform both at the organizational level and at the individual level. More specifically, we can state that with regard to the regulative pressure about the renewal or purchase of machineries, the response has been acquiescing because it has used the instruments of the reform consistent with its business plan. They predicted that from a development perspective, all the instruments envisaged by the reform will be used appropriately in a very close future. Analysing the professional training, They responded with acquiesce because my informant was the CIO (before he was HR manager), he immediately placed great attention to the training the staff both in the transition from the previous organizational structure to the new one and in forming figures with the necessary skills hired for the first time (new joiners). Geldi also relies on external consultants using various specific methods of the Italian regulatory economic context, such as interprofessional funds and co-financing for professional training. Furthermore, Geldi has planned for the future a possible collaboration with the local competence centre. Finally, as far as the diffusion of culture 4.0 is analysed, Geldi's response is once again acquiesce and depends on the fact that the company is part of the trade associations (Confindustria), which have the task of spreading the 4.0 culture of change. Moreover, some of the management members are actively part of professional bodies. For example, the company, on the initiative of the CIO, has hosted the students of the Academy 4.0, which is the organization of the students who do research in the field of the Enterprise 4.0 related concepts.

Coesum responses to the different pressures, ranges from the acquiesce category to compromise up to the point of avoidance; for the purchase of machinery it acquires with acquiesce because the purchase of new machinery has been favoured by the incentives included in the reform. In particular, the instruments used are: super and hyper amortization for the purchase of new

machinery with a high relative cost. The reasons are that the purchase of the machinery was planned even if not strictly necessary in the short term; the sector in which the company operates is a sector that requires high investments in capital goods (machinery) with a high technological content that requires a rapid turnover. More in detail, the previous machinery was functional even if dated and the incentives have accelerated the replacement process. As far as professional training is concerned, Coesum responds with compromise, as the main concern is the substitution of machinery even if it requires a period of study of how to effectively use the innovations made by the new machinery, the upgrade is marginal and the staff is already specialized and able to internal training support to learn the functionality of new machinery sporadically recurring to external training or consultants. In general, the training method of Coesum is mainly to use internal training through the support of colleagues and direct learning. The active participation to external courses is on voluntary base. This type of response is conditioned by the fact that Coesum is a small family business. Finally, as far as the dissemination of culture 4.0 is concerned, Coesum's response was acquiesce because the interview respondent was a guest speaker in the Additive manufacturing topic in the conferences organized by the Confindustria professional association as part of the project to promote the initiative's knowledge Industry 4.0. He also has good relationship with some of the researcher at the competence centre level and Innovations Hub. However, the adoption of an integrated system necessary to the full development of the reform is negatively influenced by the size of the company and the fact that there is no full understanding of the risks related to the use of these technologies especially about the externally connected devices in the smart factory. The perceived risk is still too high, and the countermeasures probably did not convince the speaker. So, the response in this case is to avoid.

General Doors is the most particular case, as it did not adhere to the national Industry 4.0 plan, although it showed a strong interest. In fact, the company has assessed the costs and requirements set by the government plan. General Doors response to the pressures brought by the reform is definitely to avoid. As for professional normative pressure, there was no pressure because the company or individuals that worked in it are not part of professional bodies or associations. In the first moment the company felt the pressure caused by the reform indirectly, because the effects of the change of technological paradigm enhanced by the effects of the reform had already started a change to the field level in the field of automated doors, which for peculiar characteristics (high degree of technological components and market share dominated by big players) is a fertile ground for the concepts of the plan. So, the company did not feel a coercive pressure but rather a mimetic pressure. Although the company could not respond with acquiesce. The company began to look for

a way at least to compromise, but not being successful due to the specific nature of the field and more particularly the cultural factor, they were forced to implement the avoid strategy of response. More specifically, escape. In fact, the company owner decides to start a new company in which they would exercise a different kind of management. Another type of pressure that led to the decision to start a new company is the social normative pressure that is explained in the pressure exerted by the sons that must raise in the management of the company. Also, in this case the pressures due to the reform are implemented indirectly; In fact, there has been, as already mentioned, a change to the field level supported by the purposes of the reform, which means that the change in technological paradigm is better understood by the second generation. In this case the social normative pressure is answered with compromise response; the owner does not adapt the organizational form of the company but looks for a different path (creating a brand-new innovative company) which, however, very probably will lead to the results that the reform proposed to obtain. Moreover, there was no professional normative pressure, because the company or individuals inside are not part of professional bodies or associations, indeed the company can't directly spread its awareness among other organizations publicly. Adopting these reasons, we can state that the response to the awareness perspective by the company was compromise. This statement has been made because even if the company is not part of the institutional circuit is well aware of the content of the reforms and has already plan an escape plan from the actual situation in order to move very soon in the direction signalled by the reform.

3Logic mk faced all the pressures listed in the previous cases. 3Logic mk reacted to the pressures with acquiescence response but due to the various strength that each kind of pressure brought to it, 3Logic mk also responded with different kind of acquiescence. In fact, we can state that with regard to the regulative pressure the response has been acquiesce because it has largely used the instruments of the reform, getting advantage for its own by the adoption of the tax credit for the research and innovation investments. 3Logic mk also provided consultancy for the clients not aware of the reform regarding the incentives that the clients were entitled to obtain. This fact allowed 3Logic mk to easing the sale of home-made products because of the reduced price that the clients get including the use of the incentives. The management of 3Logic mk claim to have had an abnormal boost in turnover since the reform came into force. Analysing the professional training, they responded with acquiesce because despite 3Logic mk had not given specific training to their employees because the climate within the company is oriented to constantly learning by doing, we can say that indirectly 3Logic mk contribute to train the employees also thanks to frequent contacts with external consultants and the qualified personnel of the counterparties. 3Logic mk make people

able to deal with a huge range of issues derived from specific client's needs, and that is a thing that no manual can do. From the governance point of view, I can say that 3Logic mk has from the beginning established an organization structure that easily allows to embrace the changes that the new technologies can bring into the context. In fact, 3Logic m adopted a flat organization model where the employees are all professional experts in their own field and the management is lean. Between employees and the top management there are few hierarchical levels. The frequent use of external consultants provides the 3Logic mk with the necessary competences to satisfy the client's needs without heaving the structure. Moreover, since the consultants and the employees work closely in touch with each other there is a huge flow of knowledge that the employees and the 3Logic mk in general benefit. This kind of structure allows 3Logic mk to fairly compete with more structured competitors and to react rapidly to technological changes. In the near future the company wants to improve the business process management by the adoption of the lean six sigma., a business process tool that combines the lean management in order to reduce the inefficiency with the six-sigma approach that aim to enhance the quality of the business processes for the customer satisfaction. An ever-increasing number of studies at an international level show the incredible results on the increase in quality and productivity obtainable with the adoption of Lean Six Sigma tools even in small and medium-sized enterprises (SMEs) (George Byrne, et al., 2007).

One of the reasons that can explain the scarce diffusion in SMEs, besides the cultural and structural aspect, can be found in the fact that very often SMEs are focused on short-term goals and the implementation of a Lean Six Sigma path typically has important returns, but in the medium to long term. The plan of 3Logic mk in this respect is to start with the lean management approach and then when the growth of the company would stabilize implement the six-sigma part. Finally, as far as the diffusion of culture 4.0 is analysed, 3Logic mk response is once again acquiesce and depends on the fact that almost all the employees were directly involved in the reform, the majority was directly involved because was part of associations responsible for disseminating the spirit of the reform across the local territory. Others was not involved in the beginning but since they had to provide final customers with consultancy services about the reform, they became expert as well. These professionals' experts often are invited for conferences and events. I personally met one of the 3Logic consultants at the Smau event in Milan where he had a speech about Industry 4.0, the smart manufacturing and the future perspectives.

5.8 *Strategic Responses: graphical analysis*

In this section I summarized the conclusive results of our analysis in a graphical way. I then compare in a table the pressures exercised by the Italian government reform Industry 4.0 and the relative answers for each organizational actor analysed.

The idea of a strategic approach to the rationality of MCS is based on the capability of actors and organizations to exploit the complex and multiple character of the rationalities included in institutional system. Oliver (1991) looks at the different ways in which organizations can respond to institutional constraints. The room for agency within the mentioned constraints instead enables organizations to envisage different behaviours when facing pressures: from the most passive – acquiescence – to the most active – manipulation, that the firm adopt to match the institutional expectations. The strategy to *acquiesce* refers to aware or unaware actions that lead to conform to the institutional pressures. The *compromise* strategy implicates the partial respect of the institutional pressures, because that strategy is chosen when the organizations are confronted with conflicts institutional pressures or incongruities among institutional pressures and internal organizational objectives. Strategy to *avoid* refers to an organization attempt to avoid the necessity to conform. This can be done through, for example, actions of *conceal, buffering or escape*. *Defiance* is a strategy that is more probable choice when the costs of non-conformity to the institutional pressures are low, the goals and the objectives of the firm are incompatible with the institutional pressures, the firm believe in his rationality or in the rectitude of the alternative actions, or the firm has nothing to lose. The strategy of *manipulation* is finally the deliberate active manipulation in a situation in which the rules and the institutional values are weak, and therefore is introduced the opportunity of change the environment and therefore turn the pressure into it's own interest. It is important to notice that the manipulation should not be understood in its negative connotation. It is a strategy in which the organization tries to change the institutional environment to satisfy its needs, rather than the opposite. This could be a very positive strategy and proactive to take, and it should be, in this perspective, very similar to the strategy of acquiescence.

The choice for a certain strategy, that is also the room of the strategic agency, depends from the relative strength of the institutional pressure and from the power of the organization. Very powerful organizations will for instance, have great possibilities to withstand the external pressures, unless concrete threat of sanctions is stated in advance from an actor that can exert some kind of legitimacy or influence on it. The weaker are the mechanisms of enforcement, and the great is the incongruity among outside pressures and internal technical imperatives, the more the space for the organizations able to manoeuvre that can build their own meaning of conformity and to implement deviant strategies (Oliver 1992). This can also be done in a process of *decoupling*; the action of

organizations that pretend to conform to external pressures while in reality adopt a best strategy for the internal fundamental functions. Just as the isomorphic pressures could be difficult to be extricated, in the same way not all the response strategies are easy to be observed in practice. The strategy of *manipulation* will be difficult to observe as it is typically a strategy of lobbying that is a complex interactive process with unknown ex ante results. Besides, this process very often take place behind the scenes indeed not easily observable. The strategy adopted by the firm in the face of institutional pressures depends on a set of contextual conditions: the cause of the pressures (economic or legitimacy issues), the participants in the pressures (the variety of actors involved and their authority), the content of the expectations (the constraints that can affect the firm's goals and objectives), the strength of the pressure exercised, and the uncertainty of the context. The institutional perspective contemplates the possibility of actors that adopt different strategic behaviours when facing institutional pressures.

GELDI

	Acquiesce	Compromise	Avoid	Defy*	Manipulate**
Regulative pressure	X				
Social normative press	X				
Professional normative press.	X				
Mimetic pressure	X				

COESUM

	Acquiesce	Compromise	Avoid	Defy*	Manipulate**
Regulative pressure	X				
Social normative press		X			
Professional normative press.	X				
Mimetic pressure		X			

GENERAL DOORS

	Acquiesce	Compromise	Avoid	Defy*	Manipulate**
Regulative pressure			X		
Social normative press		X			
Professional normative press.					
Mimetic pressure		X			

3LOGIC MK

	Acquiesce	Compromise	Avoid	Defy*	Manipulate**
Regulative pressure	X				
Social normative press	X				

Professional normative press.	X				
Mimetic pressure	X				

6 Conclusion

This chapter presents the conclusion of this research. First, the answers to sub-research questions are provided. Secondly, the answers to the sub-research questions will help address the main research question.

6.1 Sub research questions

This paragraph provides answers to the sub-research questions stated in the research. These sub-research questions are stated in order to address the main research question.

- 1. Which Institutional Pressures do the companies face?*
- 2. What are the response of the firms to the Institutional pressures?*
- 3. What goals, objectives and approaches the companies use to align their strategy to the ambition's reform?*

1. Which Institutional Pressures do the companies face?

The results present the exerted institutional pressures for the cases studied. Geldi faced regulative pressure, social normative pressure, professional normative pressure and mimetic pressure. Coesum faced regulative pressure, social normative pressure, professional normative pressure and mimetic pressure, while General doors faced regulative pressure, social normative pressure, and mimetic pressure but not professional normative pressure. 3Logic mk faced regulative pressure, social normative pressure, professional normative pressure and mimetic pressure.

2. What are the response of the firms to the Institutional pressures?

The results present the responses used to cope with exerted institutional pressures for the cases studied. Geldi adopt the strategy of acquiescence to respond to all the pressures exerted by the reform context. Coesum adopt the strategy of acquiescence for the regulative pressures and professional normative pressures that are the most formal forms of institutional pressures while adopt the strategy of compromising for the social normative and mimetic pressures. The strategy of compromising in response to the mimetic pressure is due to the fact that the company did not change the governance towards the aim of the reform. In this respect the size and the already tested

structure of the company influenced the decision. General Doors adopt the strategy to compromise with both social normative pressure and mimetic pressure that are the less formal forms of institutional pressures; once they realized that the effort was too big for them they adopt the strategy to avoid the regulative pressure. 3Logic mk adopt the strategy to acquiesce to respond to all the pressures exerted by the reforms, even though it is possible to differentiate in the strength of the response that is not the same for all.

Noticed that the responses categories Defy and Manipulate haven't been exerted by the companies studied because these strategies are suitable for medium-large companies very structured that are able to influence the institution promoter of the change, that is not our case.

3. What goals, objectives and approaches the companies use to align their strategy to the ambition's reform?

The results changes among the cases studied: Geldi started from a structured business plan that has been just partially influenced by the tools in the reform because the company already embraced the change towards innovation culture. The goal of the company is "To be the best company in the HORECA segment in the local area" and to reach this goal deployed a significant amount of resources. The intra-organizational change begins with the adoption of a new software ERP named SAP Business One Hana, that enable management and employ to manage the stream of work and the process in a more easy and direct way thanks to the integration of many functionalities. Then internal and external professional training supported by the incentives included in the reform were settled in order to trial and enable the employ to fully exploit the potential of the new tools. Finally, cultural events and meetings were held inside the companies to create shared values and beliefs in order to align the employees with management vision and with the reform purposes.

Coesum is an innovative reality but structured over time with an agile business model aimed at continuous innovation. The company is a small business led by an entrepreneur who performs administrative and management functions. The business model is consistent with what is required by the reform and therefore there was no need to reform the governance and the organizational model. Only one note could be moved on to pursue a path aimed at aggregation under various forms of the industrial district of which Coesum is part together with other companies active in the same sector or in adjacent sectors. The employees are mostly young specialists who do not need too much training on the issues of the industry 4.0 and in this case the company prefers the way of learning by doing. Even the production processes have not changed that much. In the future the company's

goal is to make everything interconnected and transparent so that the customer can control and manage the order remotely.

General Doors is a family business that does not apply excessively formalized administrative and production processes. It produces automatic doors for third parties. There has been no change due to the reform but to establish a new society. In the future, in fact, the property intends to open a new company that will support the second generation of sons and that is aimed at innovation.

3Logic mk is an IT company and therefore yet ready for the use and diffusion of the technologies promoted by the Industry 4.0 reform, however it has been strongly influenced since the establishment of the company took place in the same years in which the reform came into force. This can be seen in the company structure that is agile and easily adaptable to changes in which there are employees of the same level, so that hierarchies do not weigh down the structure and make decision-making processes faster. In addition, employees are mostly enrolled in trade associations that collaborate closely with state bodies and universities in order to promote Industry 4.0 culture, many of these take part in conferences and events organized by the most common associations and report the most up to date knowledge of the company.

6.2 Main research questions

Q1 'How were reform ambitions translated into companies goals, means and strategies?'

The ambitions of the reform have been translated into goals, means and strategies in different ways among the different companies. More specifically, we can see that companies that are more organizationally structured have a much more conscious system of goals and strategies. In fact, we have found that the less the company is structured and the less important are for the company values and beliefs, having to follow the rules and routines in a continuous way for physiological needs. In medium-structured companies, as a vision and a mission to be proposed, they are translated into means and strategies in an almost unconscious way as they are based on shared values among the various members of the company. In structured companies, instead, there is an organized process that provides for feed-back and follow-up: for instance, in Geldi the company's vision is " To grow together with our customers" and is actively pursued by the company that has a strong presence in the area in which it operates, accompanied by a great attention to customer needs. This vision is confirmed by the company mission that is to become a leader in the sector in the area of reference. To do this, the company has set itself a strong commercial development, quickly reaching fifty million turnovers, achievable through the use of technology with a view to rationalizing production and administrative processes and above all through the enhancement of company.

Q2 'How Italian companies use Management control systems to make their responses aligned with the reform ambitions?'

More structured organizational companies have put in place plans and procedures of MCS elaborated, while smaller companies have preferred, despite the reform pushed in the directions of a better structuring, to continue with the current organizational structure and therefore also with the current control system. More specifically, we have noted how the structured company has implemented integrated information processes that have contributed to move from a purely "clan control" model to a "Bureaucratic control" model in which precise rules have been established and a hierarchical structure has been set up to better respond to external stimuli of quality and transparency. The figure of the CIO was established, which was at the head of the department created ad-hoc. He first created a shared environment among the various members of the department in order to form an atmosphere that favours the alignment of the members to the goals of the company. For the training and monitoring process some senior employees have been elected who play almost a role of supervisors. The production and administrative processes have changed rather quickly thanks to the socialization processes intrinsic within the company. In fact, the training activities and professional courses highly sponsored and used by the company have encouraged a sharing of values and objectives related to the company's vision that partly avoids the use of other types of more expensive controls. In addition, a specific screening during the recruitment phase was carried out in order to choose the best candidates not only in terms of technical skills but also in terms of affinity with the company's values and vision. The medium-structured company mainly applies a form of control based on the sharing of values and beliefs through the socialization process that is typical of the "clan control" or of an informal control system. Even in the less structured company, the informal control system is the most widespread, especially since being a family-type company, where the family members are at the same time the employees.

6.3 Final conclusions

Neo institutional theory has certainly contributed to the institutionalization of the representations of the analytic framework relevant to the understanding of MCS. To gain in legitimacy in order to operate in the context, organizations cope with institutional pressures by adopting similar formal structures. The concept of institutions influences both organizations decisions and the choice of the organizational structure. This mechanism is founded on the recognition of the social construction of reality. The political and symbolic components of the organization in this sense go beyond just the

seek for efficiency. In my opinion this is the best implication of the Institutional theory: the fact that market efficiency is overestimated and that there are other forces that drives the actor's actions than profit maximization, although efficiency is in the long-term necessary prerequisite for sustainable development in competitive context.

The strategic approach to rationality concerns the possible behaviour of actors dealing with different institutional logics, defining the representations, beliefs and rules that orient them and shape reality. In the tradition of Weber, this approach considers society to be a set of distinct spheres, each having their own immanent values, norms and beliefs, and inducing different schemas of rational actions. The inconsistencies and contradictions between the various logics give the actor a certain space of action called agency. During the research I found that the institutional pressures that I broke down into mimetic pressure, regulative pressure, professional pressure and social pressure had the same direction in the majority of the cases. Conflicts have been detected regarding social normative pressure due to conceptual resistance to a certain type of innovation, which could cause employability problems; another issue regarding social normative pressure concern the training of employees that don't have technological skills who find difficult to adapt to the fast pace of technological innovation. In particular, we found space for agency especially when decrease the size of the company and when decrease the attitude to innovation. Institutionalization processes comprehend three levels of socio-historical relations: a macro level (society), a meso level (the organizational field) and a micro level (the organization). Norms and values are elaborated and diffused at the level of the widest social and economic systems. Each level recursively influences the others: social acceptance criteria influence adoption criteria in the organizational field; the practices adopted by innovative firms can, in turn, both modify (gradually or all at once) the acceptance criteria of practices of the field and question the distribution of power because of renewed practices. This can lead to change in society. The levels framework previously discussed suggests that a shift in institutional logics on the macro level may create institutional pressures generating isomorphic mechanisms due to exogenous forces related to government and stimulating the adoption of reforms. However, such stimuli need to encounter a receptive ground on the microlevel. It means that the change process is influenced by the role of key actors, acting as institutional entrepreneurs and their features, including personal interests and preferences, education, work history and networking which are to be contextualized in the specific environment where the changes take place and can explain the degree of the achieved change (Argento, Peda, Grossi. 2017). The change does not have to be destructive but very often proceeds step by step and can ultimately be considered a dynamic fact.

The institutionalization dynamic is explained thanks to the integration of structuration theory: the constitution and reconstitution of structures through social action conducted by qualified actors, acting reflexively, enables to understand the process of institutionalization, embedding and deinstitutionalization of organizational practices. Institutions can be created and modified by the actions of individuals or groups of individuals the so-called institutional entrepreneurs.

In the research we found that the role of institutional entrepreneur is mainly assumed by management and therefore the change has a top-down direction. In the companies analysed where the reform was fully adopted, other subjects than the management also contributed to inserting and disseminating the new practices and therefore to institutionalizing them. In order to do this, an open and coordinated job environment was needed, in which the sharing of corporate values was already established and alignment with the long-term strategy was carried out thanks to the use of bureaucratic control, clan control and informal control. The already favourable initial context was further supported by classroom training and on field training activities.

Institutional characteristics are motivated by the sociohistorical context, which is reflected in the prevailing rules, norms and values, along with the elaboration of meaning and symbols. Since norms, values and beliefs can be continually modified at the three levels (society, field, organization), the recursion between these levels is thus the key to understanding the possible evolution of MCS. The different levels, however, function hierarchically: the macro level provides the foundation of the organizational field, and the field, in turn, provides the context in which organizations operate. The responses of the participants in the interview to the pressures exerted at the macro level by the reform were generally welcomed by the field level; the cases of greater involvement indicate the important role played by professional associations: the fact that the members of professional associations that have played an active role in promoting the content of the reform (professional pressure) acts at the same time as decision makers inside the companies where they used to work has greatly contributed both to the initial adoption of reform measures and to the further rapid dissemination within their companies, because of the alignment with their respective professional associations.

Furthermore, a correlation was found between the size and the structure of the organization and the presence of management being member of the professional associations. As the size and structure of the companies increase, there is a greater presence of specialized technical management that relates to professional associations, while in less structured family businesses the owner/entrepreneur often coincides with management and there are no intermediate levels that justify membership affiliation to professional associations.

If we assume that the institutionalization of new practices and structures takes place for mimetic isomorphism and that the initial diffusion of the new institutional logic is due to the trade and professional associations in which small entrepreneurs are scarcely present, then we have that the adoption of the reform takes place mainly in big and medium-sized companies; the difficulty in adopting the reform by small companies is also due to the fact that the technology underlying the reform is still relatively expensive, despite the incentives given. This is mainly due to the scarce availability of capitals and resources and the deteriorated confidence in the future economic prospects.

The influence of the actors will be exerted according to their power, taking into consideration the fact that organizational fields are complex, ambiguous and conflictual, and are the outcome of the balance of power between actors who exercise their power over the others to gain legitimacy.

There is no doubt that small and medium-sized enterprises are the backbone of the Italian economy, we must always bear in mind that small and medium-sized enterprises are 98% of the total amount and therefore they would be the most powerful actor in society, but these do not constitute a single body but a fragmented constellation that does not show unitary representation on an institutional level.

This is the main reason why in my opinion the reform has not completely taken off: namely that there is a need for targeted interventions on small enterprises that seem to be those that are more distant from the reform. Since we have said that the success of the reform depends on the degree of permeation of new institutional logics to favor the circular flow between the different levels (society, field, organization), if the diffusion does not take place between small enterprises the reform will not be successfully resolved.

The actors can create resistances and conflicts, but this can also be seen as a positive force, especially when changes in power are a by-product of legitimization processes that enable interests in conflict to coincide or at least converge. This process can also be seen as positive because it can prevent dramatic consequences caused by drastic changes thanks to the mitigative effects of the mediation between the actors.

It is therefore vital that even when changing political conditions in national government there would guarantee the continuity in the spirit of the reform in order not to nullify the processes implemented up to now. On the other hand, there is a need for all the actors to have greater practical coordination in the field, especially by the most interested actors such as: the large companies that have used the incentives should act as role models and share best practices outside; Professionals should continue

with promotion and training; the state and the intermediate bodies should contribute to creating a climate of stability and trust; small and medium-sized enterprises should concretely evaluate the possibility of opening up to innovation with a view to long-term sustainability. All the most powerful actors must converge emphasizing the increasing importance of continuous improvement processes.

The MCS adopted by the companies involved in the research is somewhat congruent with statement in the literature: MCS should be aligned with the organization's strategies and goals and should fit with its organization's structure and decision-making format. The main focus objectives of MCS in this particular context is to make control appear effective even to SME's by gathering information both formally and informally inside and outside the companies through:

- accounting system: information about revenues and expenses
- Human resources system: information about payroll, absenteeism, incentives and benefits
- quality-control systems: information about defects, rework, compliance to standards etc.

The results of the interviews collected shows that: small and medium enterprises generally adopt an approach to the informal control system, mainly for economic reasons. However, even from a perspective point of view, careful use of this type of approach can be highly efficient because in addition to minimizing costs it can create a job environment of shared values that leads to a spontaneous mechanism of social control, not only of mutual behavioural control but also of automatic sharing of business practices and processes through informal interactions (exchange of information between colleagues who share the same values and culture). A fundamental element for the success of this management control mechanism is that within the job environment there must be a climate of mutual trust, as well as the free acceptance of shared company values. In fact, if the sharing of corporate values brings benefits for the fact that people are committed and do not need to be monitored, a good climate of trust and harmony among colleagues has the effect of improving the flow of information both for the decision-making process and for the aspect of informal training discussed above.

The analysis of the results shows that the enabling factors for the creation of an MCS adequate to the challenges of the current context and therefore aligned with the reform are:

- The propensity to grow in dimension that lead to the need for organizational development in these companies. If a MCS does not focus exclusively on financial aspects, it can play a key role in supporting an holistic managerial approach to face the growing complexity and qualitative improvement.

- The adoption of the quality concept: regulative norms and the diffusion of quality standards are increasing the importance of implementing MCS at strategic and operational level. When these companies introduce new norms or implement guidelines for quality improvements, they often find that their management systems are inadequate. Implementing an MCS could support the decision-making processes and help them improve their management processes and strategic control.
- The increasing importance of continuous improvement because unintended changes occur even after design and implementation of MCS. The procedures developed by the design are actors that over time can produce non-intuitive countereffects transforming the organizations up to the point where organisations may run wild. This calls for managers to intervene mobilising the design of the MCS in order to remove the countereffects and rectify the MCS. This is an ongoing process since also the rectification can produce unintended effects.

The introduction of a new MCS that take in consideration the suggested statements entails a modification of the power relations in the organization that can lead to changes reflected in the upper levels (society and field level) fuelling that virtue circle that eventually allows the full adoption of the reform.

6.4 Future Research

This sub-paragraph describes concepts for future research which became apparent from the results. An interesting aspect to consider for future research is how companies respond to institutional pressures not only at the first sight but over the time. In particular, it would be interesting to see which choices (decision-making) taken as responses to institutional pressures have overlapped and cemented over time, eventually making organizations exit from the path identified by strategies and control tools such as budget and business plan. The achievement of a choice in fact could lead if prosecuted over time (commitment) to create situations not consciously thought and in some cases even counterproductive. The effect of a choice can be counterproductive, and to restore the initial situation a second, more risky choice can be made, leading to even more counter-productive consequences. The point is to investigate whether there is truly freedom of choice (agency) and what is the level of commitment with other actors in the field that bring to isomorphic mimesis without leaving room for agency. Another area of research, even if it is very distant from the business branch, is to investigate which other forces guide the choices of the actors, in particular the decision makers at the micro level; what is the threshold in pursuing their own goals versus the company goals and what kind of mental model is necessary to align members and organization.

Finally, more in-depth analyses could be conducted (also from quantitative perspectives: for example, applying models similar to the game theory) regarding the interactions between powers in terms of pressures and responses considering the society as a whole and therefore the interactions between the three levels: society (particularly regulators and institutional bodies), field level, organizational level. The analysis should follow a double track: top down and bottom up.

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