

UNIVERSITY OF NAPLES

FEDERICO II



DEPARTMENT OF ECONOMICS, MANAGEMENT, INSTITUTIONS

DOCTORAL PROGRAMME IN MANAGEMENT

XXX CYCLE

INNOVATION AND KNOWLEDGE TRANSFER MECHANISMS

IN AN “ENGAGED” UNIVERSITY.

THE CASE OF THE “FEDERICO II” SAN GIOVANNI HUB (SGH)

DOCTORAL THESIS

BY

Mariarosalba Angrisani

SUPERVISOR:
PROFESSOR Davide Dell'Anno

HEAD OF THE PH.D BOARD:
PROFESSOR Cristina Mele

ACADEMIC YEAR 2016-2017

*A Roberto, mio piccolo grande inconsapevole
e costante motivatore.*

“Si può fare in modo serio anche una raccolta di figurine: basta fissare l’argomento della raccolta, i criteri di catalogazione, i limiti storici della raccolta. Se si decide di non risalire indietro oltre il 1960, benissimo, purché dal ’60 ad oggi le figurine ci siano tutte. Ci sarà sempre una differenza tra questa raccolta e il Museo del Louvre, ma piuttosto che fare un museo poco serio meglio fare una seria raccolta di figurine di calciatori dal 1960 al 1970.”

(Umberto Eco, 1977. *Come si fa una tesi di Laurea*, Milano: Bompiani, p. 15)

TABLE OF CONTENTS

INTRODUCTION	7
CHAPTER ONE	15
KNOWLEDGE TRANSFER AND INNOVATION PATTERNS FOR A “CIVIC” UNIVERSITY”.	15
THEORETICAL BACKGROUND	15
1. INTRODUCTION. THE ROLE OF UNIVERSITIES IN LOCAL INNOVATION.....	15
1.2. THE RELEVANCE OF TERRITORIAL PATTERNS OF INNOVATION.....	17
1.3. THE SYSTEMS OF INNOVATION FRAMEWORK	20
1.3.1. <i>What is Innovation</i>	20
1.3.2 <i>What is a System</i>	22
1.3.3. <i>Innovation systems (ISs) main features</i>	25
1.3.4. <i>Main contributions of the literature</i>	28
1.4. SHIFTING TO A HOLISTIC VIEW: INNOVATION AND ENTREPRENEURIAL ECOSYSTEMS.....	31
1.5. INSIGHTS INTO INNOVATION POLICY	33
1.6. KNOWLEDGE SPILLOVERS AND THE ROLE OF SPACE FOR KNOWLEDGE CREATION	38
1.7. NEW FORMS OF PROXIMITY TO ENHANCE TECHNOLOGY AND KNOWLEDGE TRANSFER.....	41
1.8. THE SCOPE AND FEATURES OF THE “CIVIC UNIVERSITY” IN THE LIGHT OF THIRD MISSION OBJECTIVES.....	44
1.9. THE SOCIAL SIDE OF INNOVATION	49

CHAPTER TWO	53
RESEARCH DESIGN.....	53
2.1 INTRODUCTION TO THE METHODOLOGICAL APPROACH.....	53
2.2. WORLDVIEW UNDERPINNINGS EMBRACED IN THE STUDY	55
2.3. THE CASE STUDY STRATEGY OF INQUIRY	59
2.4. TOOLS ADOPTED FOR THE DATA COLLECTION	63
2.4.1. <i>Participant observation and document review</i>	64
2.4.2. <i>Interviews</i>	65
2.4.3. <i>Surveys</i>	72
2.5. TECHNIQUES CHOSEN FOR THE DATA ANALYSIS	75
2.5.1. <i>Thematic analysis and related templates</i>	76
CHAPTER THREE.....	86
THE CASE OF THE “FEDERICO II” SAN GIOVANNI HUB (SGH)	86
3.2. THE ENGAGEMENT STRATEGY OF THE FEDERICO II UNIVERSITY	86
3.3. THE FEDERICO II UNIVERSITY SAN GIOVANNI HUB (SGH) NARRATIVE.....	95
3.3.1. <i>The San Giovanni Technology Hub historical background</i>	95
3.3.2. <i>Local governance policies related to the SGH</i>	102
3.3.3. <i>Why the San Giovanni Hub Eco-system?</i>	104
3.4. THE SAN GIOVANNI HUB (SGH) CASE	110
3.4.1. <i>Design of the inquiry</i>	113
3.4.2 <i>The Method</i>	121
CHAPTER FOUR	125
PRESENTATION AND ANALYSIS OF FINDINGS.....	125

4.1 INTRODUCTION TO THE INVESTIGATION OF THE “SGH”PHENOMENON	125
4.2. OUTCOMES OF THE THEMATIC ANALYSIS PERFORMED ON THE SEMI-STRUCTURED INTERVIEWS	126
4.3. REPORT ON THE APPLE DEVELOPER & DIGITA ACADEMIES SURVEYS	138
4.3.1 <i>Apple Developer Academy Questionnaire</i>	138
4.3.2. <i>DIGITA Academy Questionnaire</i>	145
4.3.3. <i>Data analysis</i>	152
4.4. DISCUSSION IN THE FRAMEWORK PROVIDED BY THE LITERATURE REVIEW	153
4.5. CONCLUSION	155
4.6. LIMITS OF THE WORK AND CHALLENGES INVOLVED: FRAMING AN INNOVATION PERFORMANCE EVALUATION TOOL.....	157
APPENDIX 1	161
APPENDIX 2	171
REFERENCES	186

INTRODUCTION

What happens when a former industrial area (dismissed for nearly 20 years) is replaced by a knowledge-intensive Hub hosting: a University Campus, research centres and laboratories, firms, and a hybrid form of advanced education programmes in partnership with global-scale companies?

The present research aims at defining the scope of such emerging phenomenon occurring in a peripheral suburb in the East area of the city of Naples (Italy), and characterised by the settlement of a knowledge intensive Hub involving innovation, technology and knowledge transfer processes.

The main subject of the study is the San Giovanni a Teduccio “Federico II” University Hub, a university campus and research centre hosted by a peripheral urban suburb in the East area of Naples and herein named the San Giovanni Hub (“SGH”) or simply the “Hub”.

Our work also addresses the issue of innovation led by a knowledge-intensive context in a peripheral urban area. The aim of the research is to assess the relevance of a knowledge intensive site embedded in a peripheral and less developed urban context by providing a thorough description of the SGH phenomenon. Thus, in order to set the basis to construct a tool for the evaluation of the innovation level and potential of the Hub itself.

An empirical analysis on the San Giovanni Hub has been implemented to highlight the processes of university-led knowledge and technology transfer in a peripheral and deprived urban area.

The theoretical focus of the study is forged around the “civic university” main characteristics, thus to shift from the entrepreneurial ecosystem to the concept of the “engaged university”. The “Civic University” view could be the right lenses through which analysing the SGH phenomenon. Being a transposition of the quadruple helix approach, speaking in terms of university engagement would help overcoming the vision of the University as “company-like” entity.

According to the concept of the civic university (Goddard, 2009; Goddard & Vallance 2013; Goddard & Tewdwr-Jones, 2015), universities can be rightfully considered reliable partners with cities, since they acknowledge the linkage to their location as a characterisation of their own identity, notwithstanding the national or international extent of their scope. On their turn, cities are expected to assume further responsibility for the local economy and the social issues implicated in the development process of the communities they are in charge of (Goddard & Tewdwr-Jones, 2015). Such insight should enrich the specific focus on the competences of a university in terms of technology and knowledge transfer.

Given the exploratory nature of the present study, a broad research question will drive the investigation (Braun & Clarke, 2006), in the attempt to answer to the following interrogation:

What are the main patterns and characteristics of the SGH in terms of innovation, knowledge transfer and University engagement?

In the light of the scope of the main research question, four main propositions will be supported by the present research, namely:

P.1. The San Giovanni Hub can be considered both a social and a business mission in nature.

P.2. The role of innovation process, technology transfer mechanisms and third mission objectives are able to make the SGH a unique experience in terms of university engagement.

P.3. The selected case represents both a research and entrepreneurial knowledge intensive environment.

P.4. The chosen context is able to engender and enhance value creation in terms of innovation performance and knowledge transfer challenges activities for the interacting subjects, entities and organisations which are not necessarily physically located in the same area.

Over the past three decades, a relevant bulk of literature has theorised the function and role of universities on urban and regional development (Tripl, Sinozic, & Lawton Smith, 2015; Uyarra, 2010). Within this milieu, “regional innovation systems” (RIS) thinking has emerged as a preminent conceptual paradigm, by theorising universities as deeply involved in the systemic architecture and practice of innovation. Although subject to debate concerning their very definition and scope (Doloreux & Parto, 2005), RIS approaches emphasise *“economic and social interaction between agents, spanning the public and private sectors to engender and diffuse innovation within regions embedded in wider national and global systems”* (Asheim, Lawton Smith, & Oughton, 2011, p. 878).

Actors representing the demand-side include national governance entities that regulate innovation practice, local and regional governments concerned with territorial economic development, and numerous public and private organisations concerned with high-tech entrepreneurship (Addie, Angrisani, & De Falco, 2018).

Conversely, universities and research centres occupy privileged positions as supply-side actors (with varying degrees of efficacy) providing knowledge and research competencies and generating new spin-off firms and tradable outputs (Charles, 2006). The regional functions ascribed to universities in RIS analysis do not depend on their own internal organisation and orientation (as with the “entrepreneurial”, “Mode 2”, or “engaged” university) but rather on contextually-specific relations with other actors and knowledge bases along path dependent growth trajectories (Tripl et al., 2015). Fritsch and Slavtchev (2007) suggest that the efficacy of universities in regional innovation is driven by the quality of research and intensity of interactions with firms, not the size of the institutions involved. This endogenous role is prominently captured in the nonlinear, recursive linkages of “triple helix” university-industry-government relations (Etzkowitz, 2008).

Triple helix analyses draw attention to new behavioural trends in which individuals and organizations within helices can assume roles beyond those traditionally ascribed to them. Cross-institutional relationships promote the bundling of resources to support technology transfer, firm formation, and the development of capital-intensive infrastructures. Also, they produce a transformative impact on the university itself; engendering the construction of hybridised structures to integrate teaching, research, and commercialisation activities, with entrepreneurial claims (Audretsch, 2014). Deepening interest in commercialising academic enterprise has fed into a policy

paradigm whereby universities are expected to stimulate economic development via knowledge transfer to co-located industries (or catalysing the creation of *new-Co*). With the implementation of policies pushing investments in innovation by academic and governmental institutions, universities' direct actions (spin-offs, technology parks, etc.) and indirect impacts (increased network thickness, enhanced absorptive capacity, etc.) contribute to the development of localised knowledge spill-over cultures (Lendel, 2010, p. 213), eventually extending their territorial influence (Benneworth & Hospers, 2007). As RISs reach maturity, it is often the indirect benefits – including mobilising the university as a hub for recruiting, training, and retaining regional human capital – that are of greatest importance for regional development (Berggren & Dahlstrand, 2009).

One of the pivotal themes dealt with in the present dissertation concerns the issue of knowledge spillovers (Audretsch, Keilbach, 2007) and proximity (Caragliu & Nijkamp, 2012, 2015), together with the Ba and Co- creation (Nonaka & Konno, 1998; Nonaka, Toyama, Konno, 2000; Huhtelin, Nenonen, 2015) view to explain the way in which space can convey knowledge. The previous matters involve the absorptive and desorptive capacity of actors in technology transfer processes that can affect regional innovation systems (Cohen & Levinthal, 1990; Zahara & George, 2002; Dell'Anno & Del Giudice, 2015). A reference to the main innovation systems (Freeman, 1991, 1995; Edquist, 2005) and the *milieu innovateur* literature (Maillat, 1991, 1995, 1998; Acs, 2002) will be necessarily provided, also in the light of policy mix approach on strategic policy choices (Borrás, Edquist, 2013). Furthermore, a shared approach concerning the *triple helix* interaction among university, government and industry and its evolutions will be analysed (Etzkowitz &

Leydersdoff, 1998; Etzkowitz 2002, 2008; Carayannis & Campbell, 2014; Leydersdoff, 2012), in order to connect them to the university third mission (Holland, 2001; Molas-Gallart, Castro-Martínez, 2007; Schofield, 2013; Audretsch, 2014) and the service university concept (Goddard, 2009; Goddard & Vallance 2013; Goddard & Tewdwr-Jones, 2015). Finally, a linkage with the service innovation main propositions (Vargo & Akaka, 2012) will be explained to provide a new interpretation of the innovation trends occurring in the selected area.

In reference to the chosen methodology, our work overcomes the traditional dichotomy between qualitative and quantitative research which ascribes interview methods to the former and survey methods to the latter solely.

In order to achieve such purposes, a qualitative analysis has been performed by means of a case study methodology on the San Giovanni Hub where data have been gathered by participant observation, narrative documents and semi-structured interviews to the main stakeholders of the Hub for a total of 25 interviews performed for the empirical investigation.

Indeed, in our study, 25 open semi-structured interviews have been performed and analysed to through a thematic analysis," *which works particularly well when the aim is to compare the perspectives of different groups of staff within a specific context*" (King, 2004, 257).

The outcomes of the analysis can be used as a valuable tool for both the University governance and managers of local urban institutions to promote or enhance knowledge transfer and entrepreneurial activities in the selected area.

The contribution to the theoretical framework resides in assessing the relevance of a knowledge intensive site embedded in a peripheral and less developed urban context in the light of the “Civic University” characterising features.

Conclusive remarks will highlight the limitations of the research and indications for future lines of research.

The thesis is structured in four chapters. Chapter I provides an account of the main theoretical contributions, discussing arguments supporting the rationale underpinning the study. The literature review presented in the first Chapter encompasses the following issues: innovation systems and related issues, knowledge transfer and knowledge spillovers, university third mission, the role of proximity and the concept of *Ba* to explain the linkages between space and knowledge diffusion, the civic university approach and evolution, together with a hint to social innovation dynamics.

In the second Chapter, the methodology adopted is described together with the methods used to collect and analyse the gathered data. The empirical investigation has been conducted by means of a case study methodology with the support of a thematic analysis. Chapter III addresses the description of the case study concerning the San Giovanni Hub. In Chapter IV the findings are presented and described in the light of the main propositions, showing the implementation of the thematic analysis and the selected codes and templates.

The closing Sections provides an account of the limitations of the study and some suggestions for future lines of research are presented in the closing Section

The *key words* of the thesis are the following: *Innovation, Technology Transfer, Third Mission* and the “*Civic University*”.

CHAPTER ONE

KNOWLEDGE TRANSFER AND INNOVATION PATTERNS FOR A “CIVIC” UNIVERSITY”.

THEORETICAL BACKGROUND

1. Introduction. The role of universities in local innovation

The aim of this Chapter is to provide an overview of the main contributions on innovation systems studies and highlight the potential contributions in terms of policy strategies for the development of the San Giovanni University Hub (SGH), an Innovation (eco)-system rapidly developing in a peripheral urban area hosting a knowledge intensive hub

First, the core concepts that helped building the theoretical framework of the study will be presented, in order to provide a framework of the pivotal contributions of the literature. Subsequently, insights into innovation policy main aspects will be dealt with, for they can be applied to the objective of the present research.

The role and impact of universities and research centres on regional innovation systems has been conceptualised according to evolving theories in the last decades. Such theorisation has shifted from the innovation systems approach - characterised by the knowledge spillovers of educational and research activities performed by universities in the regional knowledge background- towards the development of a further role performed by universities in enhancing regional economic and social development (Etzkowitz and Leydesdorff, 1997, 1999; Leydesdorff and Etzkowitz,

1998; Goddard and Chatterton, 1999; Chatterton and Goddard, 2000; Holland, 2001; Etzkowitz, 2002). The evolution of the role of Universities is attributable to the fact that the latter have long been recognised as providers of basic scientific knowledge for the industrial innovation through their research-related activities, whereas the “industrial pattern” was considered to belong to the manufacturing and agricultural sectors solely (Hart, 1988; Smith, 1990; Guston, 2000). In fact, the role of knowledge and of the institutions involved in the creation of knowledge was seen as exogenous to the production system, though not secondary (Freeman, 1995). The emergence of the national systems of innovation approach (Freeman, 1991; Lundvall, 1992) put in evidence the pivotal contribution of universities and research centres for the economic production system. According to such view, two dominant approaches have prevailed in conceptualising the knowledge centres contribution to regional innovation systems, namely: i. the triple helix model of university- industry-government relations (and its evolutions) and ii. the literature on the engaged university. Even though these two theoretical models both highlight that universities are increasingly linked to the territory in which they are located, they provide different analyses of the driving forces shaping such relationship. Furthermore, the assumptions concerning institutional norms and behaviours also differ in the two bodies of thought. The theoretical approach embraced for the present study is the triple (or n-Tple) helix model (Etzkowitz and Leydesdorff, 1997, Leydesdorff 2012, Carayannis and Campbell, 2014) focused on the role of universities in regional economies. Such view points out the hybrid university-industry-government relations that involve a higher need of resources, infrastructures and investments - “*e.g. real estate development in science parks and firm formation in incubator facilities*”

(Etzkowitz, 2002, p. 14). The mentioned theory is based on a non-linear model describing the interaction among university, industry and government - the three helices conceptualised in the model (Etzkowitz & Leydesdorff, 1997). A key insight offered by this model is the hybrid, recursive, cross-institutional nature of relations among the three helices, since the three institutional spheres (state, university and industry) were previously seen as separate entities interacting across strongly defined boundaries. The model emphasises a new behavioural trend in which individuals and organisations within the helices choose further roles in respect to those traditionally ascribed to them (Etzkowitz and Leydesdorff, 1997, 1999, p. 113; Sutz, 1997).

With respect to the “learning” dimension of innovation systems, the use of educated labour inside firms is considered to be a relevant issue. Indeed, innovative approaches stimulating the interaction between students and industry during their period of study combined with problem-based learning seeking for solutions to problems brought from the external world “*may be more important than more glamorous policy initiatives such as ‘science parks’ when it comes to stimulate knowledge transfer*” (Lundvall 2005, p. 116). Therefore, a deeper study of “good practice” in said domains could be an important part of the system analysis. Accordingly, international inwards and outwards mobility of highly trained workers is similarly relevant because these movements of people may represent the most effective vehicles to introduce new technology and new ideas into the system (Lundvall 2005).

1.2. The relevance of territorial patterns of innovation

Throughout the present chapter, a consistent literature on regional innovation -from the milieu innovateur theory to the regional innovation system approach and the learning region (Camagni 1991; Lundvall and Johnson 1994; Toedtling and Trippel 2005) - will be discussed. Indeed, said literature has shown that the way in which regions evolve and innovate is attributable to localised learning processes, enhanced by information, interaction, long-term production trajectories, appropriate investments in research and education (Camagni & Capello, 2017). Similarly to most learning processes, they are cumulative and rooted in the local dimension, for they embed in human capital, interpersonal networks, specialized and skilled labour markets, local governance systems. Thus, such processes are highly selective in spatial terms and need *ad-hoc* local policy interventions to be supported adequately (Camagni 2001; Camagni and Maillat 1995).

Given the fact that knowledge owns an increasingly complex nature, cooperation and networking with selected external competence sources represent necessary elements for the inclusion of complementary pieces of knowledge, avoiding lock-in with respect to local historical specializations (Camagni 1991).

In the framework of a territorial approach to innovation policies, regional innovation paths strongly depend on territorial elements and characteristics, stemming from the local society, its history, its culture and its specific learning processes. More specifically, knowledge creation can be attributable to the presence of a combination of material and non-material elements, deriving from both formal and informal sources. Among the material elements, the presence of universities and research centres, can be cited as main assets. However, a prominent difference in knowledge creation is made by intangible aspects linked to creativity, culture, taste, since they

constitute a fertile ground for the development of specialised and skilled labour markets, qualified human capital, continuous learning processes and local interpersonal cooperation networks for local communities.

Furthermore, invention, innovation and diffusion are not necessarily intertwined.

Instead, the existence and importance of knowledge spillovers is widely acknowledged since some decades (Jaffe et al. 1993; Acs et al. 1994), recalling the importance of proximity and spatial conditions in the dialectic between knowledge creation and knowledge receptivity, as it will be described in the following sections (*namely, 1.6 and 1.7 below*). Accordingly, Recent developments concerning knowledge diffusion have pointed out that proximity can be interpreted less in terms of geographical space and more in terms of cognitive and social space, due to similarities/differences in “stocks” of social and relational capital among regions (Basile et al. 2012). In fact, *the ability of an economic system to get advantage from knowledge created elsewhere depends on its culture, creativity and openness to external stimuli, i.e. on its “cognitive and social space”* (Boschma 2005; Capello 2009). Thus, different regions develop different “cognitive and social spaces” and this explains the degree of their connection, receptivity and, consequently, the potential knowledge spillovers they may benefit from.

Also, economic growth is not necessarily linked with cognitive or technological catching-up, since the ability to organise territorial factors into continuously innovative production processes and products exists selectively only in some places where tacit knowledge is continuously created, exchanged and utilised, facilitating the path of business ideas towards real markets (Camagni & Capello 2009).

To sum up: *“the preconditions for knowledge creation, for turning knowledge into innovation, and for turning innovation into growth are all embedded in the territorial culture of each region. This means that each region follows its own path in performing the different abstract phases of the innovation process, depending on the context conditions: its own ‘pattern of innovation’”* (Camagni, Capello, 2017, p. 322). For this reasons, a territorial pattern of innovation can be defined as a combination of context conditions and of specific modes of performing the different phases of the innovation process (Toedtling, & Trippel, 2005).

1.3. The Systems of Innovation framework

1.3.1. What is Innovation

Even though the term “innovation” may sound familiar, a proper and comprehensive notion could be somewhat hard to provide. Herein a definition drawn from political economics is adopted: according to Schumpeter’s view (Schumpeter, 1939), innovations are 'new combinations' of elements of existing and/or new knowledge. Such knowledge elements may originate from different actors such as firms or research centres (i.e. universities). As it is generally acknowledged, firms rarely innovate in isolation, since the innovation process implies their interaction (on different levels of intensity) with other organisations (Edquist 1997). The latter may be other firms, acting as customers, competitors, or suppliers of services (including knowledge and finance). Alternatively, they can also be other kinds of organisations such as: research centres, higher education institutions (HEIs), schools, training

institutes, government agencies, etc. Furthermore, in such innovative process, firms act in the context of existing laws, rules, regulations and cultural habits¹.

The systems of innovation approach is mainly characterised by the interdependence and interaction between the elements in the system, since innovations are not only determined by the elements of the system, but also by the relations among them. A useful example of such pattern is represented by the long-term innovative performance of firms in science-based industries (Edquist 1997). Indeed, this kind of innovation is strongly dependent upon the interaction between the firms and organisations performing relevant basic research (i.e HEIs or research centres). In order to describe a system of innovation properly, two main aspects should be addressed: the elements by which it is composed and the relations among the said elements. Such relations are complex in nature and are often identified by reciprocity, interactivity, and feedback mechanisms in some iterative phases. Hence, they are not characterised by unilateral and linear causal relationships. Thus, it can be easily argued that the innovation systems approach “*has the potential to transcend the linear view of technical change which places R&D (technology development) at the beginning of a causal chain that ends in productivity growth, mediated by innovation and diffusion*” (Edquist 1997). As a consequence, one cannot but consider innovation in terms of an interactive process naturally leading to a “*systems of innovation*” approach (Lundvall, 1992). Additionally, the concept of innovation should not be restricted to technical innovations solely. A wide scholarship refers to innovation in terms of “new combinations” (Schumpeter, 1939; Lundvall, 1992). To

¹ According to Edquist: “*firms do not generally innovate in isolation but rather in collaboration and interdependence with other organisations (firms, universities, government entities..) and their behaviour is shaped by institutions*” (Edquist, 1997, p. 20).

provide a broad definition of innovation, Schumpeter resorts to the production function, a way to describe the way in which the variation of both quantities of products and quantities of factors happens (Schumpeter, 1939). According to Schumpeter's broader view, innovation can be defined as the setting up of a new production function, thus to include both the case of a new commodity as well as of a new forms of organisation (such as a merger), of new markets, and so forth (Schumpeter, 1939). As the notion of production in economic theory is identified with the combination of productive services, consequently innovation itself may imply a combination of factors in a new way, as well as the carrying out new combinations (Schumpeter, 1939).

According to a basic distinction, innovation can be ascribed to both products and processes. More specifically, product innovation refers to new or better material goods or intangible services, whereas process innovation is linked to new ways adopted for the production of goods and services. Also, innovation can be either technological or organisational (Edquist, Hommen & McKelvey, 2001).

1.3.2 What is a System

For a comprehensive description of the innovation systems approach, providing an exhaustive definition of the main features of a system is necessary. A shared view (Edquist 2004), enumerates the main patterns of a systems, namely:

1. Consisting of two kinds of constituents: components and relations among them.
2. Having a function: i.e. performing or achieving something.

3. It must be possible to discriminate among the system and the rest of the world by identifying boundaries or its extents (Edquist 2004).

Regarding the first pattern, the main components of an innovation system are: organisations and institutions, albeit the specific set ups of organisations and institutions may vary among systems (Edquist 1997). *Organisations* are formal structures consciously established to accomplish specific and explicit purposes. They can be referred to as players or actors, such as: firms, universities, venture capital organisations and public agencies responsible for innovation policy, competition policy or security and defence regulation, etc.

Conversely, *institutions* are sets of common habits, norms, routines, established practices, rules or laws that regulate the relations and interactions between individuals, groups and organisations. They are *the rules of the game* (Edquist and Johnson, 1997), since they can be translated into patent laws, rules and norms influencing relations between research centres, HEIs and firms.

Thus, an innovation system (IS) can be referred to as the determinants of innovation processes, i.e. all important economic, social, political organisational, institutional and other factors that influence the development, diffusion and use of innovations.

Consequently, the main function of an IS resides in performing or achieving something, namely to pursue innovation processes such as to develop, diffuse and use innovations. Such function can be achieved implementing specific activities, considered as factors that influence the development, diffusion and use of innovations (i.e. the determinants of the main function).

Finally, innovation systems boundaries can be identified according to three angles:

a. spatially/geographically (national, regional or local);

b. sectorially , or

c. in terms of activities

More specifically, the three perspectives on innovation systems analysed in the ISs literature concern: 1. National IS (Freeman, 1987, 1995; Lundvall, 1992; Nelson, 1993); 2. Sectoral IS (Breschi & Malerba, 1997); 3. Regional (Cooke et al. 1997; Cooke 2001; Asheim & Isaken, 2002). Such view contributes to put in evidence the strength element of the ISs approach, which mainly consists in the possibility to apply the IS approach in policy context, focusing on Innovation and learning and on a holistic perspective. A weakness element envisaged by some authors in the ISs approach is the absence of a common or univocally shared definition of "institution" (Edquist 2004).

An early scholarship (Freeman, 1987) defines a national system of innovation as “*the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies*” (Freeman, 1987).

The same author focuses on four elements to describe a national system, of innovation namely:

1. the role of the national government and related ministry of trade and industry;

2. the role of R&D companies, especially concerning imported technology;

3. the role of education and training and related social innovations;

4. the conglomerate structure of industry (Freeman. 1987).

As it will be discussed in the following pages (1.3.3), further literature defines the concept of a national system of innovation in more extensive terms, including all parts and aspects of the economic structure and the institutional set-up affecting both learning processes and the production system. Also, marketing and financial systems and represent subsystems in which learning takes place (Lundvall. 1992).

1.3.3. Innovation systems (ISs) main features

The insights in the notions of innovation and systems provided above are meant to help relating the systems of innovation concept to a general systems concept, in which the term “systems” refers to “complexes of elements or components that condition and constrain one another in a significant way, so that the whole complex works together, following a clearly defined overall function”.

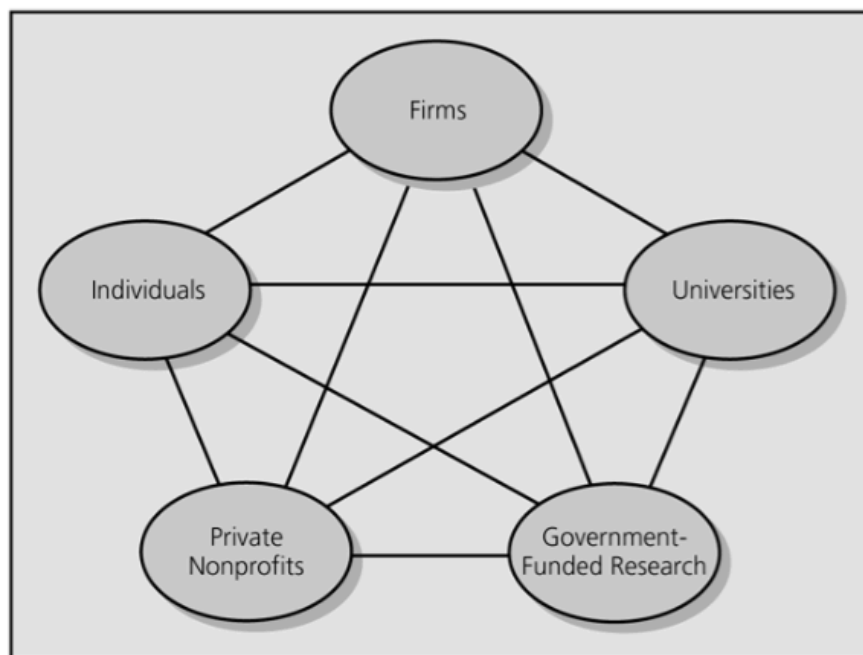
In the present discussion we share Edquist’s view according to which the concept of systems of innovation (or ISs) should be referred to as an approach or conceptual framework rather than a theory “*because of absence of well-established empirical regularities*” (Edquist 1997).

As it will be further described in the following pages, the ISs approach emphasises the importance of the learning process by stating that innovation resides in producing new knowledge or combining existing (and some new) elements of knowledge in the ways (Edquist, 2004). Additionally, the ISs approach adopts a holistic and interdisciplinary perspective since it strives to embrace a wide range of determinants of innovation, by including organisational, social political and economic factors. Moreover, its interdisciplinary trait is expressed by the effort to absorb and share

perspectives from different fields, such as economics, sociology and regional studies (Edquist, 2004).

To make it easier to stress the relevance of the interactive learning (since interactive draws systemic) and of a holistic and interdisciplinary approach (Fagerberg 2017), an effective representation of the sources of innovation as a system is provided in Schilling (2008). This scheme depicts the sources of innovation as a complex system in which every single innovation can emerge from one or more actors of the system, as well as from the linkages among the nodes in the network (figure 1.1).

Figure 1.1: The sources of Innovation system



Source: Schilling, 2008.

The same scheme regarding the sources of innovation is also useful to understand the evolution of the innovation processes in terms of research and development (R&D) by firms along the past decades.

In an early stage (50s and 60s) the R&D approach was mainly *science Push*, suggesting that innovation proceeds in a linear way: starting from a scientific discovery leading to the invention, then shifting to the manufacturing phase and the sales/marketing process for the commercialisation.

Scientific discovery → invention → manufacturing → marketing

At this stage, discoveries in basic science were the primary source of innovation that were then translated into commercial applications

From the 70s, the *demand pull* approach started to diffuse, arguing that innovation originates with unmet customer needs, which often represent the main input for the invention:

Customer suggestions → invention → manufacturing

According to this shifting approach, research staff would develop new products in order to respond to customer problems or suggestions.

At present times, as depicted by the figure above, current trends imply that innovations originate from diverse sources and research processes can follow multiple paths, such as:

- in-house R&D;
- linkages to customers or other potential users of innovations;

- linkages to external sources of scientific and technical knowledge;
- linkages to competitors, suppliers or partners (Schilling, 2008).

1.3.4. Main contributions of the literature

To understand the concept National Systems of Innovation (NIS), one should focus on a definition of innovation system that includes elements interacting to shape both innovation processes and elements linking innovation to economic performance. Early scholarship (Lundvall, 1992) introduced economic structure and institutions as two dimensions of national innovation systems, emphasising that the most important resource in the current economy is knowledge and the most important process is learning. To develop and explain these ideas according to such assumption, the analysis of innovation is driven by the focus toward the combination of innovation and learning. Since innovation is considered the outcome of efforts made or a side effect of on-going activities it is important to understand the learning processes. Meanwhile, innovation processes can be seen as processes of joint production where one output is innovation and the other is a change in the skills and capabilities of the agents involved in said processes (Lundvall, 2007).

Furthermore, focus should be addressed to the linkage between entrepreneurship, seen as the classical driver of innovation, and the notion of innovation system. To do so, it should be useful to get a better understanding of the dynamics happening within and among firms in connection with innovation and competence building. Secondly, there is a need to understand the way in which the main patterns of the innovation system approach are embedded in the set of institutions that shaping

actors of the innovation process and relationships between them. For instance, education systems, welfare regimes, labour markets and financial markets may be more or less supportive to the micro-structure, thus the main bulk of the innovation system may evolve at a more rapid rate than the wider setting, emphasising the need for radical reforms.

Shifting to a narrower spatial view, the notion of regional innovation systems (RIS) can be adopted, albeit it is not univocally defined. A shared view, however, considers it to be a set of interacting private and public interests, formal institutions, and other organizations that function according to organizational and institutional arrangements and relationships leading to the generation, use, and dissemination of knowledge (Doloreux, 2003). The rationale underpinning such argument is that said set of actors produces pervasive and systemic effects that encourage firms within the region to develop specific forms of capital deriving from social relations, norms, values, and interactions within the community, to reinforce regional innovative capability and competitiveness (Gertler, 2003).

The RIS concept draws back from two main bodies of theory and research. The first is innovation systems approach, whose literature conceptualises innovation as an evolutionary and social process (Edquist, 2004), assuming that innovation is stimulated and influenced by diverse actors and factors both within and external to the firm (Dosi, 1988). The social aspect of innovation refers to two main dynamics: 1. the collective learning process occurring among the different units of a company (i.e: R&D, production, marketing and sales, etc.), and 2. the external collaborations with other firms, knowledge providers, financing, training, etc. (Cooke et al., 2000).

The second body of literature refers to regional science and its description of the socio-institutional environment from which innovations derive. Hence, innovation emerges as a localised and a locally embedded process (Doloreux & Parto, 2005).

RIS notion has emerged in a period (mid 2000') in which policy focus was addressed on the systemic promotion of localised learning processes aiming at enhancing the competitive advantage of regions (Asheim & Gertler 2006). The choice to develop specific targeted policy measures within the regional innovation system framework is justified by the intent to improve capabilities and performance in local firms, as well as their business environment. Accordingly, it becomes of primary importance to promote interactions between different innovative actors that should have many reasons to interact, i.e. between firms and universities or research institutes, or between small start-up firms and larger organisations (Cooke, 2001). Said interactions can also include localised interactive learning as well as the wider business community and governance structure. Thus, policy strategies should be oriented toward the promotion the development of a regional innovation system and of local comparative advantages linked to specific local resources (Maillat & Kébir, 2001).

In reference to the more generic discussion on innovation, a meta-study (carried out by Fagerberg et al., 2012) based on the frequency of citation of the main contributions of the literature has led to the selection of a core literature on innovation of 130 publications ranked according to the preferences (citations) of the authors. The top 10 contributions to the core literature on innovations are reproduced in table 1.1 below.

Table 1.1: Top 10 contributions on Innovation studies

Table 1. Innovation Studies: Top 10 contributions

No	Author	Country	Title	Type	Year
1	Nelson RR & Winter S	USA	An Evolutionary Theory of Economic Change	Book	1982
2	Nelson RR	USA	National Innovation Systems	Book	1993
3	Porter ME	USA	The Competitive Advantage of Nations	Book	1990
4	Schumpeter JA	Austria/USA	The Theory of Economic Development	Book	1912 (1934)
5	Rogers EM	USA	Diffusion of Innovations	Book	1962
6	Lundvall B-Å	Denmark	National Innovation Systems – Towards a Theory of Innovation and Interactive Learning	Book	1992
7	Freeman C	UK	The Economics of Industrial Innovation	Book	1974
8	Cohen W & Levinthal D	USA	Absorptive Capacity	Article	1990
9	Pavitt K	UK	Sectoral Patterns of Technical Change	Article	1984
10	Arrow K	USA	Economic Welfare and Allocation of Resources for Invention	Book Chapter	1962

Source: Fagerberg, J., Fosaas, M. and Sapprasert (2012)

Source: Fagerberg, Fosaas, & Sapprasert, K. (2012), p. 1136

1.4. Shifting to a holistic view: Innovation and Entrepreneurial Ecosystems

A popular recent trend in the entrepreneurship and innovation policy is represented by the “holistic” approach to entrepreneurship and innovation (Autio et al. 2014). As seen above, previous studies in the last two decades have focused on national (Nelson 1993; Edquist 1997) or alternatively regional (Cooke 2001) system settings that influence innovation. Notwithstanding the level of analysis, systems of innovation represent a combination of socioeconomic, political, institutional and organisational factors affecting innovation activities and business growth (North

1990; Edquist 1997). As seen in the previous section, further studies have posited that innovation system consists of two main elements: institutions and organisations (Edquist, 2004).

Latest literature on national systems of innovation policy is attributing increasing emphasis on a more multi-functional and multi-disciplinary approach (Edquist 2004; Acs et al. 2014), including the contribution of several technology transfer studies, with insights from entrepreneurship, economics and management (Audretsch et al. 2015), enhancing the concept of Entrepreneurship as a driver for innovation (Audretsch & Belitski, 2017).

Furthermore, since a holistic approach to entrepreneurship has become a new step in the European entrepreneurship policy (Audretsch & Belitski, 2017), the focus has been shifted on the role of the entrepreneurial ecosystem and the processes of how it is developed, adapted and sustained. More specifically, the holistic approach posits researching entrepreneurial activity as an individual behaviour of entrepreneurs embedded within a local context (Szerb et al., 2013) rather than concentrating on entrepreneurial activity in isolation (Wright & Stigliani, 2012). According to such framework, the systems approach to innovation is extended to embrace new firm formation as an important reflection of entrepreneurship and innovation. Thus, entrepreneurship itself needs to be closely linked with the local (regional) innovation systems, which includes regions, innovation, network, learning and interaction (Cooke, 2001) and where the decisions are taken (Acs & Szerb, 2010; Szerb et al., 2013). Such systemic and holistic approach to regional systems of entrepreneurship may differ depending on the type of a system. On one hand, it can be industry specific (e.g. IT cluster in Reading, UK, mobile cluster in Helsinki, Finland) or

include several industries (e.g. Silicon Valley, London Roundabout). For this reasons, systems of entrepreneurship (or ecosystem) are defined as institutional and organisational as well as other systemic factors that interact and influence identification and commercialisation of entrepreneurial opportunities. Systems of entrepreneurship are geographically bounded, as it is the case for Austin, Texas, Cambridge and Oxford in England, Boston area in Massachusetts, Aalto in Finland that serve as examples of cities with thriving entrepreneurial ecosystems.

Additionally, regulation, institutions and norms, infrastructure, city amenities, access to finance and demand may vary largely between regions and cities where potential innovation and knowledge reside (Bosma & Sternberg 2014; Audretsch, Belitski and Desai 2015). The Entrepreneurial ecosystem framework determines the subjects eligible to become entrepreneurs, the way in which individual's perception can support entrepreneurial decision-making in the area, and how various domain effect entrepreneurial action and outcomes of the ecosystem (Autio et al. 2014). A relevant progress in the holistic approach to regional systems of entrepreneurship is expressed by the Regional Entrepreneurship and Development Index (REDI) (Szerb et al. 2013).

1.5. Insights into Innovation Policy

Recalling the definition provided above (1.3.3), innovation systems represent the determinants of innovation processes and the innovations themselves. Subsequently, innovation policy comprises all combined actions that are undertaken by public organisations and that influence innovation processes. Said public organisations use

innovation policy instruments as tools to influence innovation processes. The choice of policy instruments is part of the formulation of the policy, and the instruments themselves form part of the very implementation of the policy. The double nature of innovation policy instruments suggests that it is important to look at how they are chosen and the implementation practice adopted for the policy. Therefore, innovation policy includes actions by public organisations that affect innovation also in an unintentional way (Borrás & Edquist, 2013).

The ultimate objectives of innovation policy are determined in a political process. These objectives may be economic (growth, employment, competitiveness, etc.), environmental, social, related to health, defence and security, etc. The same objectives are concerned with the important consequences that innovations can engender for socio-economic and political matters such, as economic growth, security matters or the environment (Metcalf, 1995).

Public policy instruments are conventionally defined as “*a set of techniques by which governmental authorities wield their power in attempting to ensure support and effect (or prevent) social change*” (Vedung, 1998, p. 21). This generally accepted definition attributes emphasis on the purposive nature of policy instruments. Indeed, policy instruments have a purpose that translates in inducing change (or avoiding change) in a particular way, conceived to stimulate innovation, i.e. influence the direct innovation policy objectives. The specific nature of such instruments is meant to put in evidence the fact that they are put in place to accomplish an aim. Albeit innovation policy instruments are focused on fostering innovation, the latter is rarely a goal in itself, but rather a means to achieve broader ultimate political objectives, such as: economic growth, increased employment, environmental protection, military

defence and security capacity or public health. Hence, innovation policy instruments are intended to influence innovation processes, and thereby contribute to fulfilling the mentioned political goals by attaining the direct objectives formulated in innovation terms (Fagerberg, 2017). An example of policy instruments in innovation policy is provided by Borrás & Edquist (2013), as shown in table 1.2 below.

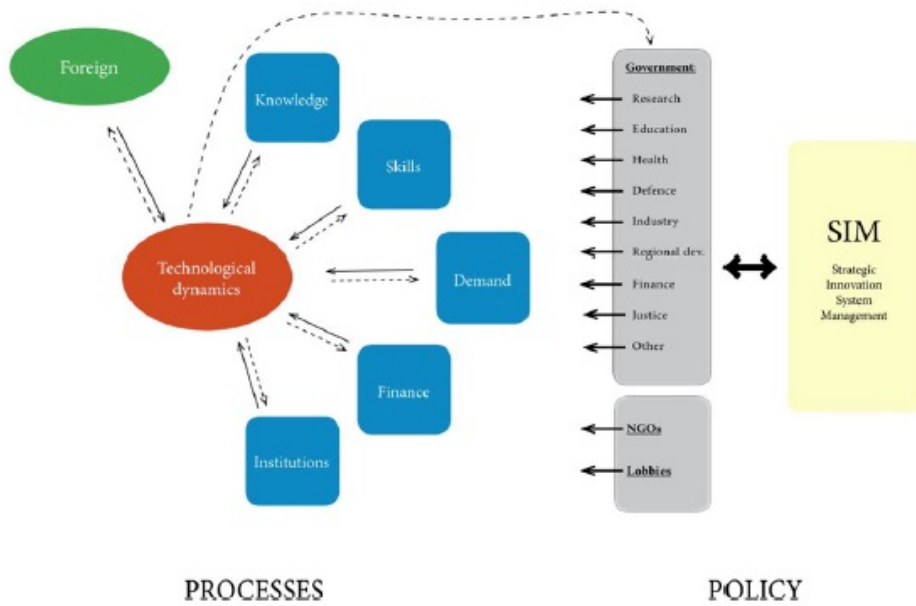
Table 1.2. Examples of policy instruments in innovation policy

Regulations	<ul style="list-style-type: none"> • IP Rights, • Universities and PRO Statutes, • Competition policy about R&D Alliances, • Bioethical regulations
Economic Transfer	<ul style="list-style-type: none"> • “En Block” support to research organisations and universities • Competitive research funding • Tax exemptions • Support to venture and seed capital
Soft Instruments	<ul style="list-style-type: none"> • Voluntary standardization • Codes of conduct • Public-private partnership • Voluntary agreement

Source: Borrás & Edquist, 2013, p. 1517

In a broad sense, the term “innovation policy” addresses all policies that engender an impact on innovation (Fagerberg, 2017), making it easier to observe impacts of policy on innovation and economic performance. Conversely, according to a narrower definition provided by an early scholarship, innovation policies are policy instruments created with the intent to affect innovation (Edquist, 2004).

Figure 1.2: The National Innovation System: Dynamics, Processes and Policy



Sources: Fagerberg 2017, p. 504.

Literature on innovation generally labels the factors influencing innovation alternatively as: activities, processes, functions and sub-functions. The present paper adopts the more generic term ‘processes’. Figure 3.1 shows the dynamics of a national innovation system. The outputs of the system, namely: innovation, diffusion and use of technology, are called “technological dynamics”, resulting from the influences of “foreign” activities within the business sector and interaction with actors in other parts of society.

Technological dynamics are depicted as affected by five generic processes of which a national innovation system is made up, defined as:

1. knowledge,
2. skills,
3. demand,
4. finance and

5. institutions.

Solid arrows in the picture indicates the influences on the technological dynamics from these processes, whereas dotted arrows put in evidence possible feedbacks addressed from technological dynamics to the generic processes. In the scheme described by the picture, the role of policymakers can be translated in influencing the technological dynamics by helping to shape the processes that impact them. To achieve such aim, they need access to an adequate supporting knowledge base as well as to coordinate policies across different fields. Additionally, their actions can be motivated by strategic choices contributing to build the “visions” for the development of society. Thus, the process described above has been named “strategic innovation system management” (Fagerberg 2017, p. 505).

Policymakers’ incentives to accomplish such actions may also be affected by the level of readiness and responsiveness to innovation of the technological dynamics of the system, thus engendering effective performance feedbacks on policy

1.6. Knowledge spillovers and the role of Space for knowledge creation

The concept of knowledge spillover (Audretsch & Keilbach, 2007) is generally related to geographic proximity. The present study shares the approach according to which knowledge spillovers are measured on the basis of different proximity matrices, focusing on the relational, social, cognitive and technological preconditions for knowledge diffusion. Indeed, such view refers to Maillat's definition of "milieu innovateur" and the related patterns of proximity (Maillat, 1991, 1995, 1998, Maillat et al. 1994).

A sound literature on knowledge spillovers (Caragliu & Nijkamp, 2015) highlights two main aspects, namely: *i.* which types of proximity enhance or hamper knowledge flows, and *ii.* whether local absorptive capacity favour such flows. Results provided indicate that knowledge spillovers across European NUTS2 regions measured through geographic, relational, social, cognitive and technological proximity channels do increase with local absorptive capacity (Caragliu & Nijkamp, 2015). This findings point towards the emergence of large clusters of regions (called "absorptive capacity clubs"), where relational, cognitive, social and technological proximity lock-in maximizes the returns to local investment in R&D.

Even though geographic space represents a valid proxy for the implicit channels along which knowledge flows, it is insufficient to make such channels explicit. In fact, it provides only limited insight into the topic of knowledge spillovers, apart from the mere identification of their existence, and an indication of the relevance of distance-decay functions. Such a shortcoming has been partly motivated by the relative lack of data and computing power on alternative notions of space. Regional

scientists and economists have rarely tried to overcome this gap, and have seldom attempted to encompass different notions of space in one single study.

In order to overcome such a gap, previous findings on the notions of proximity have been summarised, thus to identify five main typologies of space, namely: geographic, relational, social, technological and cognitive. These five dimensions represent the space over which knowledge is expected to travel. The types of proximity enumerated above are then used to define five weight matrices, on the basis of which the above-mentioned econometric transformation is applied to study outward knowledge spillovers. Such categorisation has been suggested to investigate which non-geographic preconditions can transmit knowledge spillovers, and to what extent. Two main ideas can be drawn from such premises. The first innovative idea lies in the quantification of the different intensities of the knowledge diffusion process by means of different preconditions for knowledge diffusion, in particular, highlighting the determinants of knowledge circulation over different conceptual typologies.

The second idea is related to the fact that non-geographic proximity concepts are extended towards an interregional perspective. Indeed, analysing the determinants of knowledge spillovers from an interregional point of view provides a clearer picture of the mechanisms driving the diffusion of knowledge over long distances. Consequently, the proximity concepts are expected to act as “*preconditions for knowledge diffusion*” (Caragliu & Nijkamp, 2015, p. 5) even when actors exchanging knowledge are not co-located.

The concept of “*Ba*” can be inserted in the dissertation in so that it concerns “*a shared context in which knowledge is shared, created and utilised. In knowledge*

creation, generation and regeneration of ba is the key, as ba provides the energy, quality and place to perform the individual conversions and to move along the knowledge spiral” (Nonaka & Konno, N. 1998, p. 40).

Since “*knowledge needs a context to be created*” (Nonaka, Toyama & Konno, N., 2000, p. 13), the knowledge-creating process is necessarily “context-specific” in reference to the participating subjects and the way in which they participate, as well. Knowledge needs a physical context to be created because “*there is no creation without place*” (Casey, E. S., 1997).

When dealing with knowledge creation, the context in which such event occurs cannot be neglected. Instead, social, cultural and historical contexts are important for individuals, because said contexts provide the basis to interpret information to create meanings. Thus, “*Ba is a place where information is interpreted to become knowledge*” (Nonaka, et al., 2000, p. 14).

Referring to the space within a University or higher education institutions (HEI) in terms of of “Ba” implies a vision of “*meeting-places for interaction, co-operation and learning, that not necessarily have to be physical constructs but also may consist of virtual arenas facilitated by ICT*” (Ylinenpää, 2001, p. 11).

A significant contribution combining the concept of Ba with value creation potential of an engaged University is provided by Huhtelin & Nenonen (2015) who identify the requirements of a co-creation centre as a concept serving the third role of a university. The two authors claim that knowledge co-creation process requirements in the multiuser co-creation centre for university–industry collaboration are best supported by originating “Ba”, which means the place where individuals share

feelings, emotions, experiences, and mental models and the place where the knowledge-creation process begins evaluating the success of multidisciplinary and multi-actor innovation environments (Huhtelin & Nenonen, 2015).

1.7. New forms of proximity to enhance Technology and Knowledge transfer

Regional studies literature of the last decades has stressed the relevance of space in economic interactions increasingly, prompting the analysis of alternative forms of proximities beyond geographic space. In particular, such pattern has characterised the “learning region” approach with the concept of institutional proximity (Lundvall & Johnson, 1994), as well as the “milieu innovateur” and the ‘industrial district’ theories (Maillat, 1991, 1995, 1998; Maillat et al. 1994), which focused more on relational and social proximity (Aydalot, 1986). However, such literature has often failed to provide for more complex definitions of proximity, to enrich a definition based simply on geographic space, on which an empirical verification has been carried out by the New Economic Geography framework (Fujita et al., 1999). A more recent literature has focused on alternative approaches to proximity (Boschma, 2005; Capello, 2009) mostly concerning the determinants of knowledge spillovers and regional growth. Following the path of the mentioned literature, several forms of proximity have been identified as the channels through which knowledge can be transmitted (Caragliu & Nijkamp, 2015).

A consistent urban economic literature claims that the agglomeration effects of cities – i.e. the proximity, density, and diversity of people and social activities clustered in

space – strongly define urban space as critical sites of advanced industries and seedbeds of social and technological innovation (Florida, 2002; Porter, 1996; Storper & Scott, 2016).

The contribution of technology transfer practices is required to ensure the efficiency of the technological innovation processes, thus to optimise resources and increase the level of competitiveness of a specific territory. The concept of proximity represents one of the most relevant variables of influence for the improvement of the overall performance of technology transfer processes generator of territorial innovation.

Universities are involved in a two-phase process first focused on production of knowledge and then on its application and diffusion. Linkages between academic and industrial research are strongly influenced by the degree of centralisation of the funding system. Also, Technology transfer policies involve a compromise to accommodate the public good nature of knowledge spillovers with the property rights to be provided to guarantee returns for the additional private investment required to commercialise academic research (Bercovitz, & Feldmann, 2006)

Table 1.3 provides a summary of policy considerations affecting university technology-transfer mechanisms and that can vary across innovation systems. These remarks could provide the basis for a deeper inquiry concerning the ability of the university to transfer knowledge.

Table 1.3: Considerations that affect university technology transfer mechanisms

Mechanism	Definition
Sponsored research	Is there a supply of research relevant to industry?

	<p>Are there economic incentives to finance university R&D?</p> <p>Are there antitrust provisions that limit company involvement in research consortia?</p>
Licenses	<p>Is there a sufficient supply of students?</p> <p>Are there screening mechanisms at work?</p>
Hiring of students	<p>Are faculty permitted to work outside the university?</p> <p>Are there special provisions to facilitate spin-offs regarding equity swaps, assistance, etc.?</p>
Spin-off firms	<p>What restrictions do funding sources place on licensing?</p> <p>What restrictions do universities place on licensing?</p>
Serendipity	<p>How rich/relevant is related activity in the field/region?</p>

Source: Bercovitz & Feldmann, 2006, p. 185.

Analysing the multi-faceted components of proximity -geographical, organisational, cultural, relational - (Maillat 1995, Maillat et al. 1994), a wide literature shows that a significant knowledge can be effectively transmitted mainly through direct relationships between subjects physically located in the same area, or between individuals characterised by a "cultural" proximity (Caragliu and Nijkamp, 2015, p. 4). Despite the argument according to which modern information and communication technologies have largely overcome spatial boundaries, proximity still remains a variable of influence in technology transfer processes for several reasons:

i. Proximity represents an intermediation factor between learning processes related to the context and based on mainly tacit knowledge, knowledge flows and innovation. Both the thesis of Lundvall (1992) and Maillat (1995, 1998) highlight the positive relationship between proximity and radical innovation (primarily tacit knowledge).

ii. Tacit knowledge is related to both the geographical context and personal interactions. The encoding process of implicit knowledge can be compared to a spiral in which tacit knowledge is cyclically transformed into codified knowledge, since it keeps developing new tacit knowledge (Polanyi, 1967) that needs to be made explicit (Foray & Lundvall, 1996).

iii. The geographical context cannot be regarded as a simple physical space, since it needs to be understood as an area in which social, cultural and economic conditions can be implemented and enhances.

iv. Physical proximity and cultural linkages are complementary patterns representing two types of proximity that should evolve at the same time. In such a perspective, organizational proximity represents a further dimension of proximity, as stated by a certain literature according to which relational proximity can become more important than geographical proximity in certain cases (Frasca & Morone, 2007).

1.8. The scope and features of the “Civic University” in the light of Third Mission objectives

In this section we investigate the role of universities in local innovation in the light of the “Civic university” lenses and service innovation main patterns to understand the competences of a university in terms of service capabilities. This insight is meant to enrich the specific focus on the competences of a university in terms of technology and knowledge transfer.

According to the concept of the civic university (Goddard, 2009; Goddard & Vallance 2013; Goddard & Tewdwr-Jones, 2015), universities can be rightfully

considered reliable partners with cities, since they acknowledge the linkage to their location as a characterisation of their own identity, notwithstanding the national or international extent of their scope. On their turn, cities are expected to assume further responsibility for the local economy and the social issues implicated in the development process of the communities they are in charge of (Goddard & Tewdwr-Jones, 2015).

The discourse regarding the “Civic University” stems from the attempt to provide responses to a current issue concerning the contribution that universities can make to the public good, especially in the areas in which where they are located. More specifically, the main question can be formulated referring to *what is it “good for”* in terms of its active contribution to the society as a whole, both globally and locally (Goddard & Kempton, 2016).

Even though communication has a global profile, location, proximity and uniqueness are fundamental elements, since *“the social structure is global but most of human experience is local, both in in territorial and cultural terms”* (Grau, 2015). Being key institutions of the society, universities cannot but take into account a relationship with the other institutions and communities sharing the same location, particularly those involved in the production and diffusion of knowledge, as well as public bodies such as local administrative authorities responsible for the local citizenship.

The concept of engagement within universities mainly regards the trend according to which universities themselves are rethinking their role and responsibilities, by developing further interests and purposes, such as: engaging in learning beyond the campus walls, finding pout useful functions beyond the academic community; and

providing services for the benefit of the society. Likewise, higher education policy makers are seeking to cope within national governments and agencies with specific, direct and sometimes conflicting expectations towards the activities universities are implementing, in terms of contributions to innovation, skills, the arts, cities and regions (Goddard & Kempton, 2016). These dynamics requires institutional transformation within universities and dialogue between different parts of national governments and parts of the EU. In such a diverse context, the ‘Civic University’ model can be suitable to capture the mutually beneficial engagement between the community, regional or national level and the university.

Positing that “*public support for universities is based on the effort to educate citizens in general, to share knowledge, to distribute it as widely as possible in accord with publically articulated purposes*” (Calhoun, 2006, p.20) leadership and management of universities should seek to mobilise the work of the academy for public benefit. To do so, a shift towards more effective university business models is needed, as provided by the “Civic University” view. In fact, when analysing current business models of the university, some observation can arise.

First, the entrepreneurial university model is characterised by a strengthened centralised control, an enhanced diversified funding base and a stimulated academic core (Clark, 1998).

Secondly, in the triple helix model of universities, business and government act with semi-autonomous centres that interface with the external environment supported by specialised internal units (e.g technology transfer offices) and external intermediaries (e.g technology and innovation centres) (Etzkowitz et. al . 2000).

Since both models underplays the role of humanities, place based communities and civil society and because the way innovation takes place is changing, a new model imprinted on the civic university is needed.

Indeed, the quadruple helix (QH) model attributes emphasis on broad cooperation in innovation thus, it represents a shift towards systemic, open and user-centric innovation policy. *“An era of linear, top-down, expert driven development, production and services is giving way to different forms and levels of coproduction with consumers, customers and citizens.”* (Arnkil, et al, 2010).

Goddard et al. (2016) have summarised the dimensions of the Civic University into seven main items, as shown in table 1.4.

Table 1.4: Seven Dimensions of the “Civic University”

1. It is actively engaged with the wider world as well as the local community of the place in which it is located.
2. It takes a holistic approach to engagement, seeing it as institution wide activity and not confined to specific individuals or teams.
3. It has a strong sense of place – it recognises the extent to which is location helps to form its unique identity as an institution.
4. It has a sense of purpose – understanding not just what it is good at, but what it is good for.
5. It is willing to invest in order to have impact beyond the academy.
6. It is transparent and accountable to its stakeholders and the wider public.
7. It uses innovative methodologies such as social media and team building in its engagement activities with the world at large.

Source: Goddard et al. (2016), pp. 10-11.

In order to promote a dialogue between universities and policy makers that are responsible for the territorial development the notion of the university as an “anchor” institution can be helpful. *“Anchor institutions might be characterised as not just in the place but of the place”* (Goddard et al. 2016, p. 7).

In fact, they can be defined as large locally embedded institutions, typically non-governmental public sector, cultural or other civic institutions that are of significant importance to the economy and the wider community life of the cities in which they are based. They generate positive externalities and relationships that can support or ‘anchor’ wider economic activity in the locality. Anchor institutions do not have a democratic mandate and their primary missions do not involve regeneration or local economic development. Nonetheless their scale, local rootedness and community links are such that they can play a key role in local development and economic growth representing the “*sticky capital around which economic growth strategies can be built*” (Goddard, Kempton & Vallance, 2014, p. 308).

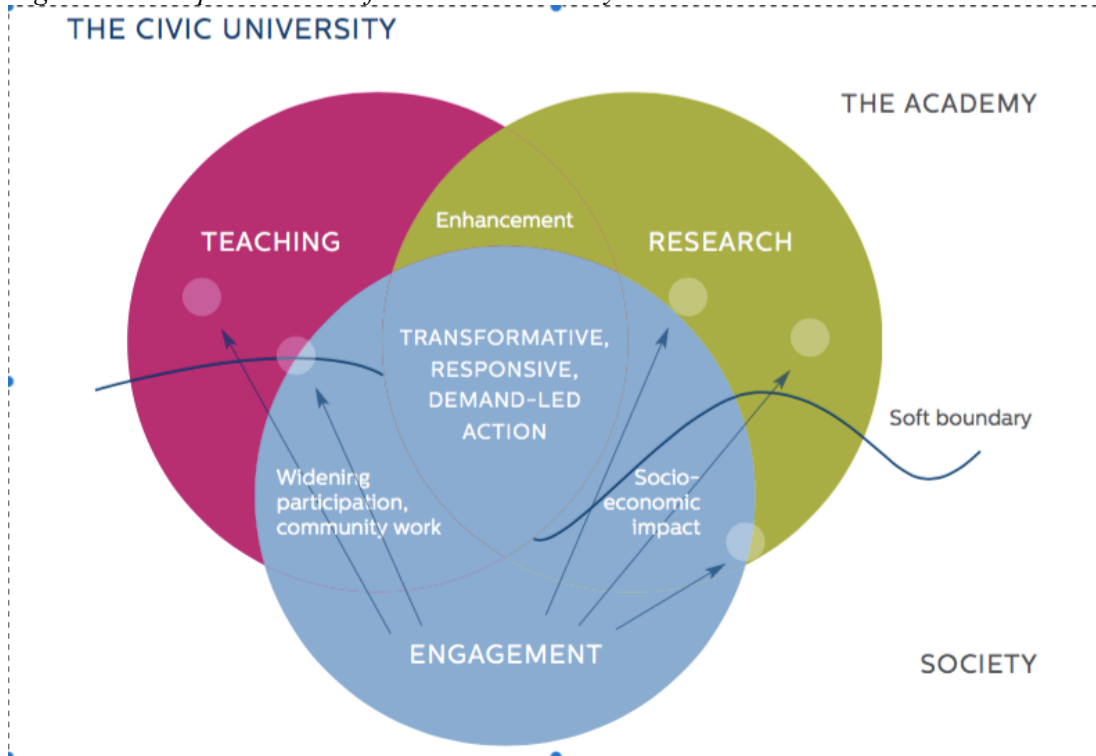
By hosting non-commercial activities that cannot be supported by the local private sector, universities can contribute to the adaptive capacity of the local economy, particularly in respect to SMEs. However, this potential is “*tensioned against the immediate opportunities of working with the best companies regardless of location and the (low) level of absorptive capacity of local businesses*” (Goddard et al. 2016, p. 11).

Moreover, a broad-based innovation strategy encompassing both technological and non-technological innovation at all levels of European society is need. Thus, to address a stronger focus on the citizen and responsible and sustainable business - a quadruple helix and place based approach to science, research and innovation (SWAFS, 2014). In such a context of societal challenges the EU Commission has endorsed the concept of Responsible Research and Innovation (RRI) representing a process where all societal actors (researchers, citizens, policy makers, business) work

together during the whole R&I process in order to align R&I outcomes to the values, needs and expectations of European society (Goddard et al. 2016, p. 10).

Figure 1.3 below visually synthesises the dynamics and linkages among the different actors and activities occurring within a “Civic” University.

Figure 1.3: A representation of the Civic University



Source: Goddard, J. & Tewdwr-Jones, M. (2016), *City Futures and the Civic University*, p. 22

1.9. The Social side of Innovation

Universities have begun to actively contributing to place making, innovation, economic and social development, becoming involved in local regeneration projects and the development of initiatives such as cultural quarters, science zones and media hubs. Even science parks have experienced an urban turn towards sites that are more mixed in function and integrated into the context of the city.

In terms of the contribution of universities to business innovation, the way innovation takes place is changing, because of the shift from a linear model to a co-production model that emphasises the important role of users, service, open and social innovation. The traditional model of linear, top-down, expert-driven development, production and services is leaving the pace to different forms and levels of coproduction with consumers, customers and citizens (Arnkil et al., 2010), thus welcoming social innovation patterns.

Accordingly, the European Commission's Board of European Policy Advisors (BEPA), has defined social innovation as: *"Innovations that are social in both their ends and their means. Specifically, we define social innovations as new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. They are innovations that are not only good for society but also enhance society's capacity to act. The process of social interactions between individuals undertaken to reach certain outcomes is participative, involves a number of actors and stakeholders who have a vested interest in solving a social problem"* (BEPA, 2010).

Additionally, a shared view claims that social innovation can be defined as *"new ideas that meet unmet needs"* (Mulgan, 2007, p. 4) and driven by a diverse set of players, including politics, government, markets and academia (Mulgan, 2007). Given the fact that a social innovation could represent *"a novel solution to a social problem that is more effective, efficient, sustainable, or just than current solution"* (Phills Jr., Deiglmeier, & Miller, 2008), the role of innovation for social progress is considered to be extremely relevant (Mulgan, 2007). Also, studies have shown that social innovation contributes considerably to the economic growth (Helpman, 2004),

for the value created thanks to a social innovation *accrues primarily to society rather than to private individuals*” (Phills Jr. et al., 2008).

The shift towards social innovation also implies that the dynamics of ICT-innovation have changed. Innovation is becoming increasingly distributed: new stakeholder groups are joining the party, whilst combinatorial innovation is becoming an important source for rapid growth and commercial success. Continuous learning, exploration, co-creation, experimentation, collaborative demand articulation, and user contexts are becoming critical sources of knowledge for all actors in R&D & Innovation (ISTAG 2010).

Following the civic university approach, and as anticipated in the introduction to this work, one of the research questions concerns whether the San Giovanni Hub third mission experience (Holland, 2001; Molas-Gallart, Castro-Martínez, 2007; Schofield, 2013; Audretsch, 2014) can be considered a social and a business mission in nature. Hence, the analysis emphasises the specific patterns characterising the San Giovanni Hub and the related policy instruments and entrepreneurial experiences (i.e. Apple, Cisco, Deloitte, Banca Intesa, etc.) implemented within it. This is the reason why our analysis addresses a specific notice to technology and knowledge transfer characteristics in the case of the Federico II University San Giovanni Hub of Naples (SGH).

By combining contributions drawn from social innovation and the civic university perspective, our study attempts to providing an insight in the innovation and knowledge transfer mechanisms engendered by the SHG, eventually leading to detect

relevant qualitative indicators in the framework of service and social innovation conceptualisations.

CHAPTER TWO

RESEARCH DESIGN

2.1 Introduction to the methodological approach

Having defined the rationale underpinning our study in the previous pages, this Chapter is dedicated to describe and motivate the qualitative methodology adopted for the present research and focused on the Case Study strategy of inquiry.

Our work shares both Stake (1995) and Yin (2009) approach to case study based on a relativist or interpretivist perspective whose premise is that multiple realities and meanings exist, which depend on and are co-created by the researcher. More specifically, the latter perspective is adopted by the constructivist paradigm², which claims that truth is relative and that depends on one's perspective. Some refer to this paradigm as *worldview* (Creswell, 2014) emphasising the relevance of the subjective creation of meaning, even though it recognises a certain degree of objectivity. Therefore, pluralism is highlighted rather than relativism by focusing on the *circular dynamic tension of subject and object* (Creswell, 2014, p. 20).

In this chapter, the qualitative methodology referring to the case study will be analysed, with regard to multiple sources of evidence adopted within its framework for “*comprehensive depth and breadth of inquiry*” (Yin, 2009, p. 18).

The first issue in dealing with case study research relates to it being referred to and used as both a methodology and a method. Literature on methodology most

² According to Kuhn's acceptance of paradigm as vision of the world that precedes the theoretical elaboration, rather than a simple theory (Kuhn, 1962).

commonly distinguishes methods as procedures and techniques employed in the study, while methodology is the lens through which the researcher views and makes decisions about the study (*see* Mills, 2014). According to this classification, some authors refer to case study as a research method, without resorting to the term methodology (Yin, 2009) whereas others describe case study as a qualitative design or strategy of inquiry (Creswell, 2014).

Both terminologies have been alternatively adopted for the goal of the present work. Indeed, the scope of the case study objective of our research is extremely broad and encompasses several tools for data collection and analysis, thus making it eligible to be also ascribed to as methodology *tout court*.

As it will be dealt with in the following sections, the case study is described through several methods of data collection, namely: interviews, observations, focus groups, artefacts and document review, questionnaires and/or surveys. The methods of analysis generally vary and depend on data collection methods and cases but need to be systematic and rigorous while triangulation is highly valued and commonly employed to provide a thorough understanding of the object of the study (Yin, 2009).

This is the most useful (and appropriate) research design for those projects that are addressing a subject about which there are high levels of uncertainty and ignorance about the subject, and when the problem is not very well understood (i.e. very little existing research on the subject matter).

Such research is usually characterised by a high degree of flexibility and lacks a formal structure. The main aim of exploratory research is to identify the boundaries of the environment in which the problems, opportunities or situations of interest are

likely to reside, and to identify the salient factors or variables that might be found there and be of relevance to the research (Myers, 2013)

2.2. Worldview underpinnings embraced in the study

The knowledge claim underneath constructivism can be identified according to several assumptions (Crotty, 1998), summarised as follows:

i. Qualitative research often uses open-ended questions to let participants express their views.

ii. People engage with the world, and make sense of it, based on their own historical and social perspective and on the culture they were embedded in.

iii. Therefore, qualitative research seeks to understand the context or setting of the participants through experiencing the context and gathering information in a direct way. Additionally, the findings are interpreted according to the researcher's own experience and background.

iv. The primary generation of meaning is always social and is built through the interaction with a human community. Thus, the process of qualitative research is mainly inductive, for the inquirer generates meaning from the data collected in the field (Creswell, 2003).

A qualitative approach to research is generally characterised by knowledge claims based on constructivist perspectives (i.e., the multiple meanings of individual experiences) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative or change oriented) or both. It also uses strategies of inquiry such as narratives, phenomenologies, ethnographies, grounded theory studies, or case

studies. The researcher collects open-ended emerging data with the primary intent of developing themes from the data.

As anticipated above, the method of inquiry associated with the qualitative approach of the present work is the *case study*.

In the case study strategy of inquiry, the researcher explores in depth a program, an event, an activity, a process, or one or more individuals. The selected case (ore cases) is (are) bounded by time and activity, and detailed information is gathered by means of diverse data collection procedures over a quite extended period of time (Stake, 1995).

The case study is a qualitative approach to research suitable for the exploration or description of a phenomenon within its context using a variety of data sources. Such a method allows to studying phenomena involving individuals or organisations, interventions, relationships, communities, or programs (Yin, 2009) and supports the deconstruction and the subsequent reconstruction of said phenomena. According to Yin (2009) a case study design should be considered when:

- i. the study should provide an answer to the “how” and “why” questions;
- ii. the behaviour of those involved in the study cannot be manipulated;
- iii. contextual conditions need to be covered because they are considered to be relevant to the phenomenon under study; or
- iv. the boundaries between the phenomenon and context are not clear.

The first challenge arising when implementing a case study is to determine the unit of analysis, i.e. the case, itself. A sound literature identifies the case with the unit of analysis, defining the former “*a phenomenon of some sort occurring in a bounded context*” (Miles and Huberman, 1994, p. 25).

Subsequently, the scope of the case study should be delimited. As already mentioned, a case study is an empirical enquiry useful to investigate a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2009). Hence, its technical features, including data collection and data analysis strategies must be highlighted. Since the case study inquiry refers to situations that contemplate more variables of interest than data points, it relies on multiple sources of evidence, in which data need to converge in a “*triangulating fashion*” (Yin, 2009 p. 18). As a result, data collection and analysis are guided by the prior development of theoretical propositions, i.e. general statements deriving from theory and setting basis for hypothesis. A shared literature (Yin, 2009; Stake, 1995) claims that propositions and issues are necessary elements in case study research in that both lead to the development of a conceptual framework guiding the research. This conceptual framework plays a pivotal role for the study, especially when it comes to the stage of data interpretation. The final conceptual framework includes all the themes emerging from data analysis. Hence, returning to the propositions that initially formed the conceptual framework ensures that the analysis is reasonable in scope and that it also provides structure for the final report (Yin, 2009). There are several reasons that back this recursive process:

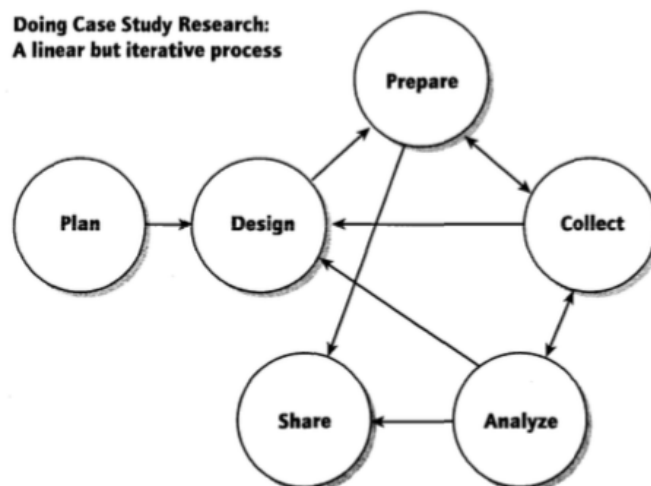
i. this practice facilitates a focused analysis, by avoiding the risk of analysing data that are outside the scope of the research questions;

ii. exploring rival propositions is an attempt to provide an alternate explanation of a phenomenon;

iii. by engaging in this iterative process the confidence in the findings is increased as the number of propositions and rival propositions are addressed and accepted or rejected.

Finally, even though a case study can be any topic, it must use some empirical method and present some empirical (qualitative or quantitative) data. Yin claims that: *“case studies can include, and even be limited to, quantitative evidence. In fact, any contrast between quantitative and qualitative evidence does not distinguish the various research methods”* (Yin, 2009, p.19).

Figure 2.1: Yin’s conception of the Case Study Process



Source: Yin (2009), p. 1

2.3. The Case Study strategy of inquiry

Case study research is generally described as a qualitative inquiry (Creswell, 2014; Merriam, 2009; Stake, 1995). As claimed in the previous sections, qualitative paradigms are broad and can encompass exploratory, explanatory, interpretive, or descriptive aims and can include, for instance, narrative research, phenomenology, grounded theory, and ethnography. Even though each methodology presents a unique approach depending on the ontological and epistemological stance, all of them stem from the purpose of exploring, seeking understanding, and establishing the meaning of experiences from the perspective of the involved subjects (Merriam, 2009). Thus, qualitative researchers can employ a broad scope of methods and interpretative practices in the same study, although they typically include observations, interviews, and analysis of participants' words (Merriam, 2009; Corbetta, 2003).

The fundamental goal of case study research is to conduct an in-depth analysis of an issue, within its context with a view to understand the issue from the perspective of participants (Yin, 2009, Stake, 1995). Like other forms of qualitative research, the researcher's objective is to explore, understand and present the participants' perspectives and get close to them in their natural setting (Creswell, 2014). Interaction between participants and the researcher is required to generate data, expressing the researcher's level of connection to the field. Because of this, constructivism and interpretivism commonly characterises the implementation of such a research design. Methods used in case study to facilitate achieving the aim of co-constructing data most often include observations, interviews, focus groups, and document analysis (Merriam, 2009; Stake, 1995; Yin, 2009).

Therefore, the researcher's perceptions and interpretations become part of the research and as a result, a subjective and interpretive orientation emerges throughout the inquiry (Creswell, 2014).

Drawing from the previous statements, case study research can be described as a versatile form of qualitative inquiry most suitable for a comprehensive, holistic, and in-depth investigation of a complex issue (phenomena, event, situation, organization, program individual or group) in context, where the boundary between the context and issue is unclear and contains many variables (Creswell, 2014; Merriam, 2009; Stake, 1995; Yin, 2009). Being primarily exploratory and explanatory in nature, case study is used to understand issues in real life settings, seeking to provide an answer to “what”, “how” and “why” research questions, respectively (Merriam, 2009; Stake, 1995; Yin, 2009).

Support for the approach selected for our research is, then, provided by a consistent literature on qualitative methodologies and case study (Yin, 2009) stating that, “*some case study research goes beyond being a type of qualitative research, by using a mix of quantitative and qualitative evidence*” (Yin, 2009 p. 18). Indeed, examples can be found of experiments (such as studies on perceptions) and of some survey questions (such as those seeking categorical and not numerical responses) that rely on qualitative rather than quantitative evidence.

Following the premises enumerated hitherto, the case study at the core of this research was developed using a combination of several techniques for data collection, both qualitative (in-depth interviews, documentary research and direct observations) and quantitative (survey).

Despite the diverse nature of the latter, the whole bulk of the inquire remains qualitative in nature, scope and purpose. In fact, the adoption of a quantitative method, such as surveys, was driven by the need to detect/grasp the perspective and perception of a specific category of students whose numerousness inevitably required a tool able to be administered to a population of about 400 subjects. Moreover, in this very study data collected from the said surveys have been discussed according to a qualitative approach, without resorting to quantitative methods to infer information that would have gone beyond the scope of the study itself or, conversely, not relevant.

The use of multiple data sources also enhances data credibility (Patton, 1990; Yin, 2009), since quantitative survey data can be collected and integrated to attain a holistic understanding of the phenomenon under investigation. In case study, data from multiple sources are merged in the research process rather than handled individually. Each data source is one piece of the broad framework analysis and contributes to the understanding of the whole phenomenon. Such convergence confers additional strength to the findings as the different sets of data are braided together to achieve a deeper comprehension of the case. Furthermore, the data collection and analysis occur concurrently. The type of analysis engaged depends on the type of case study, The classification made by Yin reflects the alternative aims pursued by the case study, which can be *explanatory*, *exploratory*, or *descriptive* (Yin, 2009) whereas Stake categorises case studies as *intrinsic*, *instrumental*, or *collective* (Stake, 1995). In addition, a further distinction is made between *single*, and *multiple-case studies* than can be either *holistic* or *embedded*. A holistic case is one where the case is the unit of analysis whereas an embedded one is where there are

several units of analysis in the case (Yin, 2009). In Table 2.1 the main patterns of the cited categories have been summarised.

Table 2.1: Definitions and Examples of Different Types of Case Studies

Case Study Type	Definition
<i>Explanatory</i>	Used to answer a question that sought to explain causal relationship in real-life interventions that are too complex for the survey or experimental strategies, making propositions to be demonstrated by the analysis (Yin, 2009).
<i>Exploratory</i>	Used to explore those situations in which the intervention being evaluated can be ascribed to a new topic or there is no evidence of the phenomena. Variables need to be defined (Yin, 2009).
<i>Descriptive</i>	Used to describe an intervention or phenomenon and the real-life context in which it occurred, making a classification or a topology (Yin, 2009).
<i>Multiple-case studies</i>	A multiple case study enables the researcher to explore differences within and between cases to replicate findings across cases. Since a comparisons will be drawn, cases should be chosen carefully to predict similar results across cases, or predict contrasting results based on a theory (Yin, 2009).
<i>Holistic</i>	The unit of analysis identifies the case itself.
<i>Embedded</i>	Encompasses several units of analysis in the same case.
<i>Intrinsic</i>	Approach used when the intent is to better understand the case. It is not undertaken primarily because the case represents other cases or because it illustrates a particular trait or problem, but because in all its particularity and ordinariness, the case itself is of interest. The purpose is not to come to understand some abstract construct or generic phenomenon. Similarly, the purpose is not to build theory (Stake, 1995).
<i>Instrumental</i>	It provides insight into an issue or helps to refine a theory. The case is of secondary interest; it plays a supportive role, facilitating our understanding of something else. The case is often looked at in depth, its contexts scrutinized, its ordinary activities detailed, and because it helps the researcher pursue the external interest. The case may or may not be seen as typical of other cases (Stake, 1995).

<i>Collective</i>	Collective case studies are similar in nature and description to multiple case studies (Yin, 2009).
-------------------	---

Source: Author's elaboration adapted from Yin (2009) and Stake (1995)

As it will be discussed in the next chapter, the case study chosen to analyse the phenomenon of the San Giovanni Hub is exploratory in nature, since both qualitative and quantitative investigations often start with qualitative studies exploring the phenomena and, later on, the quantitative studies follow to test the validity of proposition formulated in previous qualitative phase (Hlady-Rispal & Jouison-Laffitte, 2014).

2.4. Tools adopted for the data collection

A consistent literature on methodology (Corbetta, 2003; Bryman & Burgess, 1994) refers to qualitative research as a “*process*”, rather than a set of separated phases or techniques. Indeed, this shared view claims that qualitative research cannot be reduces neither to specific techniques, nor to a succession of separated stages, instead it should be treated as a dynamic process linking together problems, theories and methods. Consequently, such research process is not a defined sequence of procedures following a neat design, but it is a “confused” interaction between the conceptual and the empirical world where deduction and induction happen at the same time. Nevertheless, qualitative research detection techniques can be grouped in three main categories based on three main actions: “*observing, interviewing and reading*” (Corbetta, 2003, p.14).

2.4.1. Participant observation and document review

Through the observation the researcher studies a certain social phenomenon firstly immersing him/herself personally, so that he/she can live it from the inside to be able to provide a direct description of it. Therefore, participant observation is appropriate for collecting data on naturally occurring behaviours in their usual contexts (Corbetta, 2003).

Participant observation is a research technique through which the researcher directly enters in a certain social group taken in his natural environment for a relatively lasting period of time. Thus, it makes it possible to observe their actions and understand their motivations through an immersive process. In the participant observation, involvement and identification need to be pursued (whereas objectivity and distance are not desirable).

When comparing participant interview and participant observation, some specific differences arise. First, the immersion in the social reality that the interviewer operates is not as deep as that achieved with participant observation. Secondly, the interviewer does not identify her/himself completely in the research context, even if the basic objective remains that of accessing the perspective of the studied subject (Corbetta, 2003).

The use of documents regards the analysis of a specific social reality starting from a generally written materials provided by the same society both through its individuals (private documents) and by its institutions (official reports, press release and documents, company files, etc.). In the present work only public documents have

been selected, in order to support the description of the context and the institutional background in which the unit of analysis is embedded.

2.4.2. Interviews

In social research, many detection techniques can be found that are characterised by a different degree of interaction with respondents and standardisation of procedures. The range of typologies goes from the most rigid forms in which the interaction between the interviewer and the interviewee is very small - like the scaling techniques used in the questionnaires - to very flexible and open forms - like the hermeneutical interview - in which the interviewee is free to express himself and the communication process is not guided by the inflexible flow of a trace or a questionnaire. The interview, as an information gathering activity, is one of the main tools for collecting information in social science. There are many definitions that underlie different and often conflicting conceptions of social science. According to some, the adoption of the interview as a detection tool would connote research as *qualitative*, while the questionnaire would be the typical instrument of a *quantitative* research (Corbetta, 2003)

The interview techniques can be traced back to a typology shaped considering as main "*fundamenta divisionis*" the degree of flexibility of the interview and of the autonomy of the actors involved in the communication event, as well as the level of depth of communication (Corbetta, 2003).

In literature it is usual to articulate the different types of interviews along three dimensions, namely: the directivity, the standardisation and the structuring, which essentially contain the previously considered *fundamenta*.

Directivity consists in the possibility for the researcher to establish *a priori* the contents of the interview and corresponds to the degree of autonomy granted to the interviewer and to the interviewee in varying the content of the questions and answers. An interview with a low degree of directivity allows the free flow of the communication process, since it allows the interviewee to express himself in his own words and at his level of understanding.

Standardisation concerns the degree of uniformity of stimuli offered to all respondents in relation to the formulation and succession of questions and answers. The greater is the standardisation, the lower is the depth of communication, because the freedom of expression of the interviewers and the interviewees will be reduced, given the need to passively stick to the questions and answers provided. Finally, the structuring regards the degree to which the interrogation modalities are specified, that is the level of detail and articulation of the interview trace. A high level of structuring entails a high rigidity of the interview, because the interviewer and the interviewee cannot leave the pre-established track. To sum up, while structuring is directly related to the tracking level, standardisation and directivity only indirectly concern the track, whereas they refer directly to the management level.

With the interview, the researcher can grasp behaviours and motivations to certain actions thanks to the descriptions provided by the subjects themselves, interviewed on their experiences, opinions and perceptions.

Table 2.3: *Qualitative Interview defining elements*

<i>Qualitative Interview</i>	
Patterns	Main Features and Characteristics
<i>It is a conversation:</i>	<ul style="list-style-type: none"> • caused by the interviewer; • addressed to selected subjects on the basis of a plan systematic detection; • in substantial numbers; • having a cognitive purpose; • guided by the interviewer on the basis of a flexible and non-standardised interrogation scheme.
<i>Characteristic elements with respect to the questionnaire</i>	<ul style="list-style-type: none"> • Absence of standardisation. • The aim is not: to place the interviewee in pre-established schemes but to grasp his mental categories. The overlying voice is that of the interviewee. • The purpose of the qualitative interview is: to understand how the subjects studied see the world, to learn their terminology and their way of judging, to capture the complexity of their individual perceptions and experiences. • The priority objective of the qualitative interview is to provide a framework within which the respondents can express their own way of feeling with their own words (Patton, 1990).
<i>Understanding against documentation</i>	<ul style="list-style-type: none"> • Distinction between the context of the discovery and the context of the justification. • The question is not a tool for data collection but for understanding social reality (to understand, not to simply describe). • Absence of representative sample. • The substantive representativeness (in depth study of a few cases) is preferred to statistical representativeness.
<i>Subject-centred approach vs. variable-centred approach</i>	<ul style="list-style-type: none"> • The researcher wants to reconstruct stories, not to study variables. • From the selected cases he/she can detect models, types, sequences.

Source: author's elaboration based on Corbetta, 2003.

A widely used method to classify the different types of interview takes into account the flexibility of the communicative interaction between the interviewer and the interviewee(s). A certain literature foresees tripartition in structured, semi-structured (or partially structured) and unstructured interview, considering the diverse degree of standardisation (freedom/constraint) granted to interviewee and interviewer.

Structured Interview

All the interviewees are asked the same questions in the same formulation and in the same sequence (equal stimulus for all). It is a questionnaire with open questions.

The structured interview seeks to mediate between the quantitative and qualitative approach. It is the only one that allows a mixed qualitative and quantitative analysis (coding of answers + analysis of the interviews pieces). It is a hybrid technique: it loses flexibility but gains in the ability to codify responses. It has less ability to standardize the questionnaire and goes deeper than the unstructured interview. However, it is the right tool if you want to collect "data" (for a quantitative description) and at the same time the phenomenon is not known enough.

Semi-Structured Interview

In the semi-structured interview, structuring, standardisation and directivity levels are lower. The only tool available to the interviewer is a detailed trace of the interview, or a list of topics, organised in a series of open questions, on which he will have to collect all the information requested by the researcher with the right to adapt to the individual interviewed both the questions and the order in which they arise (Corbetta, 2003).

The interviewer has a track with the topics to be discussed during the interview (content), however there is freedom with respect to the sequence and the way to formulate the questions. The interviewer decides the style of the conversation, the words to be used, when and what to clarify. It can also develop unanticipated themes that arise in the interview.

Non-Structured Interview (Free, In-depth)

A non-structured interview is characterised by the individuality of the topics and the itinerary of the interview. The interviewer poses only the general theme of the conversation (e.g. political participation, consumption, etc.) but it is the interviewee who maintains the initiative of the conversation, chooses and introduces the sub-themes. The relationship with the interviewee varies from case to case. The interviewer has only the task of encouraging him, pushing him to deepen it, to stem excessive ramblings. It is not possible to have pre-established questions a priori or even an interview scheme: every interview is a case in itself.

In-depth interviews are suitable for collecting data on individuals' personal histories, perspectives and experiences, particularly when sensitive topics need to be explored (Corbetta, 2003).

Interview with privileged observers

A special case of qualitative interview is that addressed to "privileged observers". The latter category of respondents encompasses experts of the phenomenon, and/or people who occupy a particular position in the studied population. The resort to privileged observers often occurs in the preliminary phase of a research, in order to better define the outlines of the study object.

In our work, most interviewees fall in both the category of privileged observers and of subjects of the study since they belong to the set of main stakeholders embedded in the unit of analysis. Thus, in some cases, their status of subjects of the study coincide with that of privileged observers, making the two types of interviews overlap.

Once the interviews are terminated, it is necessary to analyse them. Qualitative data analysis is focused on subjects, thus referring to the individual as a whole, whereas quantitative approaches are centred on variables. Therefore, results are generally presented in a narrative form, where generalisations are shaped according to classifications and typologies. However, when referring to structured interviews, data can be analysed according to a mixed approach, i.e. qualitative and quantitative (through a data matrix).

Table 2.4: *Qualitative interviews taxonomy*

	Questions Content	
Questions Form	Pre-set	Non Pre-set
Pre-set	<i>Structured Interview</i>	
Non Pre-set	<i>Semi-Structured Interview</i>	<i>Non-Structured Interview</i>

Source: author's elaboration

For the purpose of our study, we opted for a semi-structured interview technique, as this offers the possibility of exploring subjective experiences.

An interview can be considered semi-structured even if the researcher intends to use a data matrix to organize the collected information: the interviewer submits the question in an open form, leaving the coder with the task of tracing the answer given by the interviewee to a certain category³ (Corbetta, 2003). The communication process is less rigid than that of the structured interview: the interviewer can decide to put the interviewee at ease by clarifying the meaning of obscure questions,

³ In this detection technique, information is collected using a non-standard technique, in order to preserve the semantic richness of respondents' answers; subsequently, the information, coded in the matrix, is analysed with standardised procedures. Between the gathering and coding phases of the information, there is the fundamental interpretative intervention by the interviewer/coder.

ascertaining whether he has a position on the subject treated and reformulating (or skipping) potentially reactive questions. The interviewer can also decide which topics to deepen, if useful for understanding the interviewee's opinions. The possibility of making changes, even partial, to the interview track guarantees greater fluidity and dynamism of the communication process: the interviewer and the interviewee are free to interact and communicate, albeit within a predefined list of topics.

Among the various forms of semi-structured interviews, the best known is certainly the "focused" interview (Merton, Fiske & Kendall 1956), whose objective is to gather opinions, attitudes and the reactions of the respondents to a specific theme or to a specific social or personal event that unites them⁴.

With regard to the sampling choice, respondents have been selected according to a purposive criterion, falling within the non-probability sampling category.

In general terms, sampling techniques enable to reduce the amount of data to be collected considering only data from a sub group rather than all possible cases or elements. The nature of sampling can be probabilistic or non-probabilistic, according to the quantitative or qualitative aim of the analysis. Given the qualitative patterns of the interviews performed through our research, a non-probability sampling has been chosen. Indeed, when adopting a purposive sampling, the researcher resorts to his/her judgment to select cases that can provide proper answer(s) to the research question(s) (Bryman & Bell, 2011).

⁴ The first applications of the focused interview took place in the field of mass communication studies.

2.4.3. Surveys

Sample survey is a way of detecting information obtained by querying the same individuals who are the object of the research, and belonging to a representative sample, through a standardised interrogation procedure in order to study the relationships between the observed variables.

As anticipated in the previous section, the sampling could be probabilistic or non-probabilistic. Considering the more quantitative attitude of the survey, the probability sampling results to be more effective, since it is suitable for question where the quantity is relevant.

In a probability sampling the probability of each case to be selected from the population is known and equal, it is often associated with survey and experimental research design. In fact, in the selected case study the sampling only included two categories of students, among those attending the Hub.

The survey conceived and implemented in the present study is structured as a questionnaire with a scaling technique, i.e. a set of procedures developed to measure complex and not directly observable concepts. The only way to register said concepts is to use a coherent and organic set of indicators, also setting up inter-subjective criteria to control the actual overlap between indicators and concept and completeness of the procedure. Therefore, a scale is a coherent set of elements that are considered indicators of a more general concept (Corbetta, 2003).

The technique of scales is used above all in the measurement of attitudes, where the unit of analysis is the individual, the general concept is an attitude (underlying

beliefs not directly detectable) and the specific concepts are opinions (empirically detectable expression of an attitude).

The variables produced by the technique of scales cannot be considered fully cardinal, because they derive from underlying dimensions imagined as continuous non-measurable properties, even if the theory of scales tries to give an answer to this problem. This is why the variables of the theory of scales are called quasi-cardinal.

The procedure at the base of Likert scales consists of the sum of the points attributed to each individual question. The format of the individual questions on the Likert scale is represented by a series of statements for each of which the interviewee has to say if and to what extent he agrees. Usually the answer alternatives are five, from "very much" to "strongly against" or similar statements.

The construction of the scale takes place in four phases. The first one is the formulation of the questions in which the dimensions of the studied attitude are identified and statements are formulated to cover the various aspects of the general concept to be highlighted.

The second phase deals with the administration of the questions: the scale is generally subjected to a limited sample of respondents with a certain level of education, which is the case of the study under investigation.

The analysis of the elements is the object of the third phase, in which the questions are selected and the degree of internal coherence of the scale is assessed (i.e. if the scale actually measures the concept under examination). Indeed, it is possible that some elements are not in line with the others and should therefore be eliminated. The tools used in the third phase are the element-scale correlation and the alpha

coefficient. For the element-scale correlation, the score on the whole scale is calculated for each subject and the correlation coefficient between this score and the score of each single element is calculated. The correlation coefficient is a measure that quantifies the degree of relationship between two cardinal variables and indicates whether the score of each individual element moves in the same direction as the overall score that takes into account all the other elements. If this does not happen, the question is not congruent with the scale and must be eliminated. The alpha coefficient, on the other hand, serves to evaluate the overall internal consistency of the scale. It is based on the correlation matrix between all the elements of the scale and their number, the higher the values (from 0 to 1) the greater the internal coherence of the scale.

The final phase is focused on the checks on the validity and the uni-dimensionality of the scale. The most effective technique for controlling one-dimensionality is that of factorial analysis. Its purpose is to reduce a series of variables linked to a lower number of hypothetical independent variables, in order to check if there is only one factor or more factors behind the elements of a scale that is presumed to be uni-factorial (Corbetta, 2003).

The type of scale used in our survey is a Likert scale. The advantages of the Likert scale consist in its simplicity and applicability, while its disadvantages are the fact that its elements are treated as cardinal scales while being ordinal (with partial semantic autonomy), the lack of reproducibility (from the scale score it is not possible to trace to the answers of the individual questions) and the fact that the final score does not represent a cardinal variable.

2.5. Techniques chosen for the data analysis

In order to eventually find adequate responses to the research questions guiding our investigation, the contents of the semi-structured interviews has been analysed according to the thematic analysis technique. The choice of applying such a specific, technique for the analysis of the interviews has been motivated by the objective of providing the most thorough description and account of the main elements and patterns emerging from the interviews. Hence, this section is dedicated to the description of such useful analysis tool.

Thematic analysis has been widely used in qualitative research (Braun & Clarke, 2006), even though it has been rarely appreciated in the same way as grounded theory, ethnography, or phenomenology. A consistent literature argues that thematic analysis should be a foundational method for qualitative analysis, as it provides core skills for conducting many other forms of qualitative analysis (Braun & Clarke, 2006). Some authors consider it to be a process used by many qualitative methods, suitable to be used to assist researchers in analysis (Boyatzis, 1998). In fact, others claim that thematic analysis should be considered a method in its own right (Nowell, et al., 2017; Braun & Clarke, 2006; King, 2004). We share the latter view, maintaining that thematic analysis is a qualitative research method that can be widely used across a range of epistemologies and research questions. It is a method for identifying, analysing, organising, describing, and reporting themes found within a data set (Braun & Clarke, 2006). Boyatzis (1998) describes thematic analysis as a translator for those speaking the languages of qualitative and quantitative analysis, enabling researchers who use different research methods to communicate with each

other. A rigorous thematic analysis can produce trustworthy and insightful findings (Braun & Clarke, 2006); however, there is no clear agreement about how researchers can rigorously apply the method. While much has been written about grounded theory, ethnography, and phenomenology, the same attention has not been paid with regard to thematic analysis. Although it has been described in successful ways (*see* King, 2004), only a recent literature has begun to outline the pragmatic process for conducting trustworthy thematic analysis is still (Nowell, et al., 2017).

2.5.1. Thematic analysis and related templates

Thematic analysis is the process of identifying patterns or themes within qualitative data. A sound literature on the topic suggests that it is the first qualitative method that should be learned as *“it provides core skills that will be useful for conducting many other kinds of analysis”* (Braun & Clarke, 2006, p.78).

King (2004) refers “template analysis” to define a set of techniques for organising and analysing textual data according to a thematic criterion. In a template analysis a list of codes (defined as “template”) is produced, representing themes identified in the textual data. Some of these codes are usually defined a priori, following both the theoretical background and the main propositions of the research, but can be modified and added to in the process of reading and interpreting the texts. The layout of the template is meant to represent the relationships among the chosen themes and is often arranged through a hierarchical structure.

Template (or thematic) analysis may be used within a range of diverse epistemological positions since it consists in a method rather than a methodology

(Braun & Clarke 2006). In the contextual constructivist position, the researcher assumes that there are always multiple interpretations to be made of any phenomenon, depending upon the position of the researcher and the context of the research. Coding reliability is considered to be irrelevant, conversely issues such as the reflexivity of the researcher, the attempt to deal with the topic from differing perspectives, and the richness of the description are important requirements. Phenomenological, inter-actionist and some narrative approaches fall within this category (King, 2004).

The fact that thematic (template) analysis is not tied to a particular epistemological or theoretical perspective makes it a very flexible method, unlike many qualitative methodologies. Flexibility is expressed by fewer specified procedures, permitting researcher to tailor it to match his/hers own requirements (King, 2004).

Additionally, template analysis can handle rather larger data sets than other qualitative techniques, as thematic analysis studies usually between 20 to 30 participants/interviewees.

In our study, 25 open semi-structured interviews have been performed and analysed to through a thematic analysis, which works particularly well when the aim is to compare the perspectives of different groups of staff within a specific context (King, 2004).

There is a variety of ways to approach thematic analysis (*see* Boyatzis, 1998) even though it owns distinct characteristics in comparison to other techniques such as qualitative content analysis. In fact, content analysis is sometimes considered to be similar to thematic approaches, for it is a method used to identify patterns across

qualitative data, as well. However, this analysis tends to focus at a more micro level, often providing (frequency) counts, and allowing for quantitative analyses of initially qualitative data. Thematic analysis differs from this in that themes tend not to be quantified and the unit of analysis tends to be more than a word or phrase, which is typical of a content analysis (Braun & Clarke, 2006).

The goal of a thematic analysis is to identify themes, i.e. patterns in the data that are important or interesting, and use these themes to address the research or say something about an issue. It is not a simply synthesis of the data, for an effective thematic analysis should interpret and make sense of the selected data.

Since thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data, it requires an active role of the researcher in identifying patterns/themes, selecting those of interest, and reporting them.

When evaluating what to count as a theme, one should consider that a theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set.

The flexibility of thematic analysis allows the researcher to determine themes (and their prevalence) in several ways. If the researcher adopts an inductive approach, it means the themes identified are strongly linked to the data themselves (Patton, 1990) whereas a “theoretical” approach to thematic analysis is driven by the researcher’s theoretical or analytic interest in the area, thus being more explicitly analyst- driven.

The choice between inductive and theoretical is framed onto how and why data need to be coded. Coding can either occur for a quite specific research question (which maps onto the more theoretical approach) or the specific research question can

evolve through the coding process (which maps onto the inductive approach). Notwithstanding the selected criteria, it is important to be consistent in performing this choice within any particular analysis.

A common pitfall of the thematic analysis is to use the main interview questions as themes (Braun & Clarke 2006). Typically, this reflects the fact that the data have been only summarised and organised, rather than analysed. Two levels of themes can be distinguished: semantic and latent (Braun & Clarke, 2006). Semantic themes can be found “*within the explicit or surface meanings of the data and the analyst is not looking for anything beyond what a participant has said or what has been written*” (Braun & Clarke, 2006, p.84). In contrast, the latent level looks beyond what has been said and “*starts to identify or examine the underlying ideas, assumptions, and conceptualisations – and ideologies - that are theorised as shaping or informing the semantic content of the data*” (*idem*).

The analysis conducted for our case study identifies themes at the semantic level, describing what has been said to focus on interpreting and explaining it. The main areas of the interviews have served as categories on which themes have been later detected.

To sum up, thematic analysis involves the searching across a data set, be that a number of interviews or focus groups, or a range of text, in order to find repeated patterns of meaning. Also, it is not a linear process of simply moving from one phase to the next. Instead, it can be seen as a recursive process. This is the reason why thematic analysis is a useful tool to investigate an under-researched area, or when working with participants whose views on the topic are not known.

The thematic analysis implemented in our work follows a 6-step framework taken from a clear and usable approach (Braun & Clarke, 2006), as shown in table 2.5.

Table 2.5: Thematic analysis main phases

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes	On-going analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Source: Braun & Clarke (2006), p. 87

While in content analysis the researcher first builds a coding scheme, then applies it to the texts to generate quantitative data for statistical analysis, the development of the template in template analysis is not a separate stage from its usage in analysis of texts. Indeed, in qualitative thematic analysis the initial template is applied to analyse the text through the process of coding, however it can be revised in the light of the on-going analysis.

A convenient starting point for constructing an initial template is the interview topic guide, i.e. the set of question areas by the interviewer. Main questions from the guide can serve as higher-order codes, with subsidiary questions as potential lower-order codes. This method is most effective when the topic guide is quite substantial and structured in qualitative terms, since the interviewer has defined in advance most of the topics to be covered. The analysis implemented for the case studied in the present research has falls within this specific application example.

In reference to the framework synthesised above, some observations regarding certain phases can be made.

First, the coding phase depends on whether the themes are more “data-driven” or “theory-driven”. Even though coding can be performed either manually or through a software programme, in the present work a manual process has been implemented.

“A code is a label attached to a section of text to index it as relating to a theme or issue in the data which the researcher has identified as important to his or her interpretation” (King, 2004, p.257). Listing codes occurring in each transcript, with some indication of frequency can be a useful activity to be performed at an early stage of the analysis. The distribution of codes within and across transcripts can help to focus on aspects of the data that may need further examination.

The frequency of codes *per se* does not necessarily imply *“anything meaningful about textual data”* (King, 2004, p. 266), whereas patterns in the distribution of codes within and across cases may suggest areas for deeper insight. The analysis should make the researcher able to identify the themes relevant to accomplish an effective understanding of the object of the study.

A core characteristic of template analysis is the hierarchical organisation of codes, where groups of similar codes are clustered together to build more general higher-order codes. Hierarchical coding allows the researcher to analyse texts at different levels of specificity. Broad higher-order codes can give a reliable overview of the general direction of the interview,

The initial template can consist of several highest-order codes, sub-divided into one or more levels of lower-order codes. The extent of sub-division broadly reflects the depth of the analysis, where the second and third highest-order codes cover the central issues of the study.

Secondly, when all data have been initially coded and a list of different codes identified across the data set is generated, the phase of searching for themes can begin. In implementing such phase a thematic map can be helpful to describe the relationship between codes, between themes, and between different levels of themes.

Finally, in the phase concerning the review of themes a dual criteria is generally adopted, i.e. internal homogeneity and external heterogeneity to judge categories that are worth considering for the sake of the analysis.

Once an initial template is constructed, the researcher should work systematically through the full set of transcripts to identify sections of text that can be relevant to the objective of the project. In this way, the transcripts can be marked with one or more appropriate code(s) from the initial template. In the course of this process, inadequacies in the initial template can be revealed, eventually leading to changes. Through the latter the template develops to its final form.

Defining and naming themes implies an interpretative activity for, the template and the coding derived from it are only means to the end of interpreting the texts and are meant to help the researcher giving an account able to encompass the richness of the data thoroughly.

Finally, the presentation of findings in a written form should not be considered as a separate stage from analysis and interpretation, but rather as a continuation of it. Through summarising detailed notes about themes, selecting illustrative quotes, and producing a coherent “story” of the findings, the researcher continues to build his/her understanding of the phenomena under examination. Furthermore, the use of direct quotes from the participants is of fundamental importance to give “*participants a flavour of the original texts*” (King, 2004, p.268).

The approach to thematic analysis chosen in the framework of our research has focused on an account structured around the main themes identified, drawing illustrative examples from each transcript.

Additionally, Braun and Clark (2006) specify the activities to be performed to accomplish each phase successfully. The checklist describing said activities has been followed when implementing the thematic analysis for the purpose of the present study and is reported in table 2.6.

Table 2.6: A 15-point checklist of criteria for good thematic analysis

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for ‘accuracy’.
Coding	2	Each data item has been given equal attention in the coding process.
		Themes have not been generated from a few vivid examples (an

	3	anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed interpreted, made sense of rather than just paraphrased or described.
	8	Analysis and data match each other the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done, i.e described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as active in the research process; themes do not just ‘emerge’.

Source: Braun & Clarke (2006), p. 96

As a closing remark and according to the description of the thematic analysis technique provided in this section, several advantages and few disadvantages can be enumerated, as summarised in table 2.6 below.

Table 2.7: Advantages and disadvantages of the thematic analysis

Advantages of thematic analysis
<ul style="list-style-type: none"> - Highly flexible approach that can be modified for the needs of any study in a particular area. - Welcome to those who want to take a phenomenological and experiential approach to organisational research. - Principles behind the technique are easily grasped by those relatively unfamiliar with qualitative methods – in part because of the similarities to content analysis

- Works very well in studies which seek to examine the perspectives of different groups within an organizational context (King, 2004).
- Relatively easy and quick method to learn, and do. Accessible to researchers with little or no experience of qualitative research.
- Results are generally accessible to educated general public.
- Useful method for working within participatory research paradigm, with participants as collaborators. Can usefully summarize key features of a large body of data, and/or offer a “thick description” of the data set.
- Can highlight similarities and differences across the data set.
- Can generate unanticipated insights.
- Allows for social as well as psychological interpretations of data.
- Can be useful for producing qualitative analyses suited to informing policy development (Braun & Clarke, 2006).

Advantages of thematic analysis

- Lack of a substantial literature on this kind of technique (King, 2004).

Sources: adaptation from Braun & Clarke (2006, p. 97) and King (2004, p. 268).

CHAPTER THREE

THE CASE OF THE “FEDERICO II” SAN GIOVANNI HUB (SGH)

3.1. Introduction

Chapter II was centred on presenting the methodological approach to the analysis of the SGH phenomenon. In this chapter, the case study related to the objective of the investigation is carried out on the basis of the observations and methodological approaches previously introduced.

In order to explain the context and background in which the San Giovanni Hub phenomenon is set, a premise on the engagement strategy of the Federico II University Hub is included in Section 3.2.

Subsequently, a narrative on the Federico II San Giovanni Hub genesis and historical background is provided in Section 3.3.

The second part of the chapter (Section 3.4) is dedicated to the exploration of the empirical field, explaining in detail the design of the research and the methods adopted, with a special focus on the thematic analysis.

3.2. The Engagement Strategy of the Federico II University

As stated in art. 2 of its Statute, the main purpose of Federico II University are "research and teaching that the University pursues by promoting the organization, processing and transmission of knowledge, cultural and professional training, the

growth of civil awareness of students". The principles inspiring the research and teaching activities are reported in art. 3 of the Statute are:

- to adopt criteria and establish principles that allow a balanced distribution of financial resources for research, taking into account all sources of funding, objective articulations of the research sectors and their actual needs, as well as of the quality and productivity of the research, evaluated according to specific criteria and indicators disengaged from exclusively economic logics;
- to encourage basic research in each discipline;
- to provide on-going training on the basis of criteria and training standards that are uniquely recognized at national, Community and international level.

Art. 3 of the University Statute also claims the "equal relevance of humanistic, scientific and technical knowledge",

According to a recent trend envisaging a deeper involvement in the civil and entrepreneurial society, the two institutional missions of the University - teaching and research - must open up to relations with the outside world, as emerges from paragraphs 10 and 11 of art. 2, which assign to the University the "task of contributing to the development of culture, social and economic well-being and the level of production of the country, including through forms of collaboration with national and international subjects, public and private (...)".

The University also guarantees full and open access to scientific literature and promotes the online free dissemination of research results produced within the University, to ensure their widest knowledge by creating a "European area of lifelong

learning". Through these further aims, the University embraces the spirit of the third mission linked to the so-called "knowledge society", endorsing the interaction among politics, industry and knowledge as the key to territorial innovation and economic development⁵.

Innovative teaching

Thanks to the testing of new forms of teaching, Federico II University has propelled innovative teaching experimenting with a new way of "giving courses". In this context, a scientific and technological cooperation agreement was signed with the Apple for the 2016-2018 three-year period with Apple aimed at creating the iOS Developer Academy. The Apple Developer Academy (originally named iOS Developer Academy), is providing the necessary knowledge to those who want to operate in the development of software for iOS devices, experimenting a new teaching methodology where the teacher no longer has a "chair" but is immersed among the students, talking with them visually through a 90-inch monitor arranged along the perimeter of a large open space and acoustically by means of ceiling loudspeakers. Even the classic bench or seat with writing desk gives way to a more convivial round table connected to the electric network and the internet.

In the field of innovative teaching, the telematics teaching in *blended mode* has to be mentioned. Starting from the academic year 2015/2016, it has been tested - through

⁵ The information included in this section have been drawn mainly from the Strategic Plan 2016-2019 of The Federico II University retrieved from: https://www.unina.it/documents/11958/13909147/Piano_Integrato_2017-2019a.pdf, latest visited on 7 November 2018, pp. 4-5 and 19-23.

the *Federica@* weblearning platform - in the areas of engineering, medicine, pharmaceutical sciences, architecture, and human sciences.

The Federica Weblearning infrastructure consists of a digital platform and a wide range of e-content services and products. Federica Weblearning proposes a new model of "content oriented" services to support learning, combining the academic tradition and innovation of the digital age. The Federica project has allowed the development of a real "learning environment", within which the construction of knowledge takes place in a personalized way, thus meeting the needs of an ever-wider audience of users / beneficiaries who are allowed to follow distance a university course, orientate and update, download and study educational content through the web, smartphones and tablets. It is an interface with a high degree of user-friendliness that focuses on three factors: open access, flexibility and portability of contents. As for courses in English, the platform contains: 12 courses in the catalog, 2 courses in production, 25 courses in programming. This offer in English integrates courses in Italian: 48 courses in the catalog, 19 courses in production, 39 courses in coding.

Telematics teaching can also be used for the provision of courses in English to foreigners and therefore to reinforce the internationalization of study courses.

In the framework of strengthened activities in support of the Research, an action planned to favour the process of dissemination of the results of the University research consists in the participation in the promotion of the Open Access system and the creation of an appropriate database accessible via the web, together with other Italian universities.

Internationalisation

Within the scope of internationalization actions, Federico II University intends to promote the activation of "international" courses (courses with didactics delivered entirely in English or granting the achievement of a double degree in agreement with foreign partner universities) thus, enhancing the formative role of towards Mediterranean countries (though not exclusively) and increasing the ability to attract foreign students. As part of the "Internationalization of Study Courses" project, co-funded by the University and the Compagnia di San Paolo, specific support actions are foreseen for the Study Courses (Master's Degree and Single Cycle Master's Degree) with a more marked international character as contributions for Visiting Professor and outgoing mobility of a semester of students to the foreign office of the Visiting Professor from these selected scholarships for "foreign" students, that is in possession of an admission title obtained abroad. Other actions related to the internationalisation project, in addition to the offer of 6 courses taught in English, are a web-based dissemination campaign and an enhancement of logistic support to foreign students. The web-based dissemination campaign provides for the dissemination in online newspapers of the educational supply in English in the following countries: Morocco, Poland, Ukraine, Russia, Greece, Romania. These countries were selected according to the influx of foreigners who already attend courses of study of Federico II. As far as China is concerned, there are specific agreements already in place. The campaign will be carried out by offering the potential students of these countries administrative and logistical facilities. The announcement will be published in the language of the country and in English with a link to the reference Department of the Course where the student can find all the

information in English. With this in mind, the expansion of the logistic support to foreign students is inserted, the lack of which represents one of the points against this initiative. In particular, it is emphasised the absence of university residences of the University, whose availability exerts a particular attraction on foreign students as emerged from an analysis carried out. In order to compensate for this deficiency, the University is considering activating agreements with bed and breakfast facilities in the immediate vicinity of the educational sites, in order to offer these students free residence for a first period (30-60 days). Students will have an academic tutor and they are studying the possibility, in agreement with the Council of students, to activate a project called "adopt a foreign colleague" to facilitate the introduction into the fabric of the city. This will allow the foreign student to more easily get in touch with the university and the city. On an administrative level, a mid-range enrolment fee is being defined for all these students. In order to improve the attractiveness of foreign students, the University also aims at developing the potential offered by the Federic@ Weblearning online platform, for the provision of courses in telematic mode appropriately designed for use by students coming from foreign countries and in possession of a qualification obtained abroad.

Business creation

In the field of business creation, Federico II is partner of the Acceleration program of the New Steel start up accelerator and Città della Scienza holds a "Business incubator" certified according to the ISO 2001 standard. With the agreement of the 29 / 10/2016 the Federico II and Città della Scienza have therefore decided to set up as a company - pursuant to art. 25 paragraph 5 of the D.L. n. 179/2012 converted into Law n. 221/2012 (so-called Growth Decree 2.0) - a single large certified incubator in

Campania able to compete with the main national and international operators in the sector, bringing together their respective experiences, activities and projects matured in the field. Article. 25 paragraph 5 of the D.L. n. 179/2012 converted into Law n. 221/2012 (so-called Growth Decree 2.0) provides that "the incubator of innovative start-ups certified, hereinafter:" certified incubator "is a joint-stock company, also incorporated in a cooperative form, under Italian law or a *Societas Europaea*, resident in Italy pursuant to article 73 of the Decree of the President of the Republic December 22, 1986, n. 917, which offers services to support the birth and development of innovative start-ups and is in possession of the following requirements: a) it has facilities, including real estate, suitable to accommodate innovative start-ups, such as reserved spaces to install equipment of test, test, verification or research; b) has adequate equipment for the activity of innovative start-ups, such as ultra-broadband internet access systems, meeting rooms, test machines, tests or prototypes; c) is administered or directed by persons of recognized competence in the field of enterprise and innovation and has at its disposal a technical structure and permanent management consultancy; d) has regular collaboration with universities, research centres, public institutions and financial partners that carry out activities and projects related to innovative start-ups; e) has adequate and proven experience in supporting innovative start-ups, whose existence is assessed pursuant to paragraph 7 ". IDIS Città della Scienza Foundation - after the signing of the agreement - established the new company CAMPANIA NEW STEEL s.r.l. to entrust all the activities related to the Incubator and in whose capital the University Federico II subsequently entered with a 49% stake. The purpose of the company is "the construction and management of a certified incubator operating in

Southern Italy, which offers services to support the creation and development of innovative start-ups, and in possession of the requirements referred to in the aforementioned paragraph 5 of the Article 25 of the DL n. 179/2012 ". The aim of the company is to "build an operational techno-structure equipped with spaces and laboratories to realize the incubation of new innovative start-ups in Naples, Campania and Southern Italy and at the same time a commercial tool at the service of members in the 'scope of incubation and business creation activities'.

Recent developments and results

Since 2016, thanks to a co-founding support by a MISE (Italian Ministry of Development) -UIBM (Italian Patent Office) project, a wider and intense set of actions has been implemented to promote the technology transfer and / or IP exploitation of the Federico II University. Most of the above-mentioned actions can be summarised as follows:

- projects aiming at establishing university spin-offs (non-participated) and sometimes to accompany and guide the growth of these spin-offs;
- support to the participation in calls for proposals and tenders for competitive research and development;
- support to the negotiation of research services for third parties and the enhancement of pre-existing knowhow through sale to third parties (for consideration).

Additionally, significant consulting activity has been implemented regarding the practice of patent application and in particular for the ex post reconstruction of the ownership of the industrial exploitation rights of the research products, in the context

of joint university-enterprise projects and / or in partnership with subjects other than University.

The results achieved in terms of relations with researchers and stakeholders of the University and that would not have been possible without the commitment of additional resources to the Technology Transfer Office (TTO) provided by the MISE-UIBM funding. Such outcomes mainly refer to knowledge and scouting action, one to one implemented in order to reach professors and young researchers at their respective offices and / or laboratories, offering them a specific consultancy service for each individual case, albeit with a global and synergistic view of structure. Thus, in order to acquire a wider consensus coming from the bottom and gradually increasing.

Notwithstanding its efforts and support from central and local government institutions, Federico II University operates in a context that is particularly difficult from an economic standpoint. In fact, it is affected by the historical backwardness of the southern areas exacerbated by the presence of external factors that negatively influence economic activities (organised crime). In such a background, the University has always tried to act as a reference point for the youth population by promoting the process of social growth through training and research activities. This role is consolidating in the last period in the awareness of the importance of the university culture as an instrument of improvement and progress of the company also in relation to positive signs of development in sectors that connect directly to the research and innovation sector. A contribution to innovation can come from the perspective of the incentives provided for the adoption of digital technologies (following the Industry 4.0 project framework), which are still relatively uncommon,

as well as by the innovative start-ups of which there is a rapid growth in the Campania region. The most recent technological evolution is favouring a growing digitalization of the production phases and their ever greater integration, allowing the most advanced companies to achieve advanced levels of customization of the products and services offered, while continuing to operate on large production scales (mass customization). This evolution has been called "fourth industrial revolution" and hence the term Industry 4.0.

3.3. The Federico II University San Giovanni Hub (SGH) Narrative

3.3.1. The *San Giovanni Technology Hub* historical background

In the 2016/2017 academic year, the University inaugurated the modern and functional "University Complex of San Giovanni", located in the eastern area of the Naples metropolitan area, which houses part of the Engineering teaching area. This site is added to the "historical" headquarters of the Campus of the Fuorigrotta neighbourhood of Naples (namely in Piazzale Tecchio, Via Claudio, Via Nuova Agnano). The initial allocation of the Complex of San Giovanni is represented by 9 classrooms for about 1000 seats / student, a 430-seat auditorium, study space for about 600 m², a large parking area of about 400 seats / cars and an area of computer labs.

The Technology Hub of San Giovanni a Teduccio was originally conceived as a University Campus to decongest the Fuorigrotta office of the Faculty of Engineering of the University of Naples Federico II. Such an option was motivated by the

simultaneous beginning of the re-development of the East area of Naples. The nearly 3000 new enrolled students of the Engineering Faculty (the academic year 2016/2017 has marked the record of 3200 matriculations) represent 25% of the total Federico II enrolments. The graduate and undergraduate programmes in engineering are attended by about 17,000 students in total. Thus, the decongestion with new classrooms and laboratories was required in order not to lose competitiveness. On the other hand, following the example of Naples neighbourhood of Fuorigrotta starting since the late '60, the placement of a University attended by numerous students *“is the best possible flywheel of urban redevelopment, with the accompaniment of bars, restaurants, stationeries, banks, offices etc. which implies⁶”*. For this purpose, the intervention is part of a memorandum of understanding signed on March 31st 1998 by the Ministry of University (Minister Luigi Berlinguer), Campania Region (President Antonio Rastrelli), Municipality of Naples (Mayor Antonio Bassolino) and Federico II University (Rector Fulvio Tessitore). In particular, with the protocol and various subsequent acts, the Ministry and the Region pledged to finance the work, the Municipality to prepare the necessary urban variant and the University to purchase from the bankruptcy administrator of the former Cirio area.

The following stages, namely the purchase of the former Cirio area (April 2002), the tender for the selection of the designer (contract in May 2004), the final design (approval from Board of Directors of Federico II in December 2005), the tender for the executive design and the construction and start-up of the works (contract with the ATI winner in the March 2008) took place with Guido Trombetti, Rector, and

⁶ The first part of this section combines narrative on the SGH from extract of newspaper articles, official press release and from some of the interviews administered to some of the SGH main stakeholders for the empirical analysis. The italics are drawn from the interviewer coded Uni-Academic-03/Ent-03.

Professor Edoardo Cosenza, his first delegate for the construction and Dean of the Faculty of Engineering from 2005 to 2010.

The choice of the definitive project of the group of Japanese origin Ishimoto Europe was motivated by the rationality of the intervention, which included a basement for parking (currently 500 parking spaces, expected to be doubled by the end of the construction process) and therefore no cars in sight, and the opening total and free to citizens, with level 0 completely open to form a huge green park between the main roads of Corso Nicola Protopisani and Via Nuova Villa and with entrance also from via Pietro Signorini. In addition, the splendid Japanese architecture provides the base of the first two lava stone levels, to remember the presence to the east of Vesuvius and in any case the local tradition, with the upper floors that seem to fit in the lava stone, with facades consisting of modern windows and coloured loggias. The extreme technical difficulty of the intervention is emphasized by the presence of superficial aquifers, given the proximity to the sea, and pollution from hydrocarbons, due to the refineries that were settled in the entire eastern area of Naples (today remained as coastal deposits). Special construction techniques have allowed the realisation of the underground parking lot in groundwater, and all the environmental problems have been resolved in full compliance with the strict legislative framework in force. The test laboratories, unified in the CeSMA University Centre (Centre for Advanced Measurements) were inaugurated in 2015 by Rector Massimo Marrelli, while Proffs. Trombetti and Cosenza had become Regional Assessors for Research and Public Works respectively. The laboratories were financed with European funds and are equipped with state-of-the-art equipment in the environmental, civil,

aerospace and mechanical sectors, hydraulics, cold measurements, electrical measurements, advanced mechanics, sports engineering, virtual reality.

The teaching centre, with over 1000 seats in modern classrooms, and the wide suspended auditorium, with 3D projections, Super HD screen and Dolby Surround, were inaugurated in September and October 2016 (Rector Gaetano Manfredi and the delegate for the development of the San Giovanni Polo). The success of the Hub can be also traced back from the request made by over 800 students to be enrolled in so that they could attend courses in the San Giovanni Campus.

On the other hand, the potential basin is enormous, including the Sorrento peninsula, the Vesuvian municipalities and the Eastern part of the city of Naples. Transportation studies conducted by engineering professors have shown that students from various parts of the Province can earn up to two hours of study by choosing the East Engineering Pole instead of the West of Fuorigrotta. The beauty and efficiency of the pole, together with the international tradition of Federico II, attracted the Apple multinational that took over the first European School (iOS Academy, now Apple Academy) in October 2016.

The agreement between Apple and Federico II has allowed to training 1000 developers who will enter the Apple ecosystem in the 2016-2018 three-year period, now extended for three further years. Training foresees to combine entrepreneurial studies with advanced computer skills, design and all that is necessary to create successful Apps. Other international groups, such as the Axa Matrix group, an expert in risk analysis for natural events, have settled in the Hub, as well as Banca Intesa

that has opened an equipped area in the HUB, in particular for the financing of start-ups and advanced financial services.

The project was accompanied by the development and redesign of the area of The rail and road transport system. In particular, at the suggestion of the Municipality of Naples, there has been the displacement of the terminus of the underground line 2 to San Giovanni, so that practically all the trains of the Pozzuoli - Campi Flegrei - Garibaldi section also arrive in San Giovanni. A new exit of the station was also opened practically in front of the complex. At the end of the road redevelopment works of the road axis, financed by the Caldoro Council and currently in execution with the Municipality of Naples as the implementing subject, the trams 2 and 4 coming from Piazza Municipio will arrive in front of the entrance of Via Signorini del Polo with Metro lines 1 and 6) and from Piazza Garibaldi/Piazza Nolana (further interconnections with the central station and the circumvesuviana). Students and teachers who come from the Sorrento peninsula, from the municipalities of Vesuvius and the Salerno province, can directly use the Circumvesuviana station, located 800 m / 10 minutes-walk from the Hub. The environmental requalification continues rapidly, with the spontaneous opening, due to local entrepreneurship, of bars, restaurants, pizzerias, stationery shops in the area. The Great Hall is used for conferences but also for cinema projections using the high technological performances. The park is already very visited by the citizens, who admire the ancient chimney today used for the emission of the air conditioning system, and the wooden crucifix positioned in ancient times at the entrance of the Cirio, preserved for thirty years by old workers and recently positioned in a special housing in the park and rededicated. The appreciation of the local inhabitants for the Hub is

demonstrated by the respect for the street façade of the main building which is open to the. To date it does not show the slightest sign of vandalism. Therefore, the Hub is increasingly becoming a centre of interaction between teaching, research, and industrial and entrepreneurial groups, bringing very significant training and work opportunities. Also, it represents a successful example of urban re-qualification which has been appreciated by the European Commission as a good practice of use of European funds.

The Hub is planned to be expanded over the next few years through the construction of new structures that will allow more than 4000 students to be accommodated and to host educational, research and technological transfer initiatives within functional spaces and avant-garde architectural structures⁷.

Thanks to the partnership between Apple and Federico II University consisting in a scientific and technological cooperation agreement - the University Hub of San Giovanni hosts the first Apple Academy in Europe, which allows hundreds of students to provide practical skills and training for the development of apps for the most innovative digital system in the world. The activities started in October 2016 with a nine-month course for 200 students, designed and supported by Apple, with a dedicated structure within the new Campus. The facility includes laboratories with access to the latest Apple hardware and software products. The Agreement also defines the financial charges bared by Apple, on a three-year basis, for the

⁷ The information included in the second part of this section have been drawn mainly from the Strategic Plan 2016-2019 of The Federico II University retrieved from: https://www.unina.it/documents/11958/13909147/Piano_Integrato_2017-2019a.pdf, latest visited on 7 November 2018, pp. 24-25.

implementation of the initiative, which amount, in total, to €5,500,000.00. In particular, these resources will be used to support the related costs, namely:

- the establishment and operation of a project support structure;
- the salaries and financing of staff members and visiting professors;
- the payment of scholarships that Apple has committed to provide for 5% of students.

The duration of the collaboration has been set in a minimum initial period of three years, with automatic renewal for one year.

Each annual cycle is divided into two semesters and involves the participation of a maximum number of 400 students (except for the first cycle, for which the participation of a maximum of 200 students is expected). During the first semester, academic programs are provided for the development and improvement of students' skills for software development on the iOS platform; during the second semester, students collaborate with each other to create applications (iOS, tvOS, and/or watchOS) which will then be submitted to Apple for distribution in the relevant Stores.

In the context of Federico II University latest activities related to the Third Mission, a further strategic asset should be highlight: the CeSMA – Advanced Metrology and Technological Services Center, also located in the new San Giovanni a Teduccio Campus. The Centre carries out advanced measurement activities, by supporting various fields of Engineering, Physics, Chemistry and Biology and includes several areas of expertise, thanks to the presence of researchers and technicians of Federico II and laboratories that allow them to carry out consultancy activities for the

outsourcing of specific measurements. Moreover, due to the numerous collaborations with foreign institutions and research centres, CeSMA is a privileged interlocutor for companies of any size, both active and newly established, that require advanced metrology services.

Figure 3.1 The San Giovanni University Hub, Naples



Source: http://www.scuolapsb.unina.it/downloads/grafica/sedi/san_giovanni.jpgunina.it, reproduced with permission.

3.3.2. Local governance policies related to the SGH

The conjunction of regional innovation policy and university restructuring has engendered the development of new post-metropolitan spatial structures in Naples. Through a series of tax breaks, the Regional Government has targeted the revitalisation of the historically deprived east Naples district of San Giovanni a Teduccio as an urban innovation district. Plans for a San Giovanni University Hub propose regenerating a 200,000 m² coastal strip of Naples and adjacent suburbs via targeted investment in industrial sectors and research centres, and the development of campus facilities, and a conference centre, i.e the Federico II San Giovanni Hub, in San Giovanni a Teduccio. By consolidating new and existing laboratories working

across the fields of engineering, physics, chemistry, and biology, the physical and social infrastructure of the Hub has been conceived is to promote interactions between the University and an emerging local cluster of high-technology enterprises and research facilities.

Since September 2016, first-year students attending all Engineering undergraduate programmes can choose which location – the San Giovanni Hub (East Pole) or the Fuorigrotta Hub (West Pole) – to take courses as both provide comparable facilities and programmes. Building on this foundation, the Regional Government voted on 8 November 2016 in favour of allocating €45million to complete the San Giovanni University Hub; with €17million apportioned to develop the New Materials Hub of the Italian National Research Council (CNR) and €28million assigned for additional lecture rooms, offices, and research space. Linking urban planning and economic policy, a transportation improvement plan has been implemented to enhance the accessibility of the San Giovanni University Hub,

The Regional Government (Giunta Regionale) of Campania has sought to strengthen regional resilience by shifting the target of local economic policy from building territorial R&D capacity to promoting knowledge sharing and dissemination through an inclusive, sustainable innovation ecosystem. To this end, a new Campania Local Government Division (Assessorato) for Internationalization, Start-Ups and Innovation – the first regional ministry in Italy dedicated to start-ups – was established in 2015.

3.3.3. Why the San Giovanni Hub Eco-system?

As described in the previous paragraph, the San Giovanni Hub was originally conceived to help Federico II University of Naples de-locate some of its engineering graduate and undergraduate students that counts a total of about 20.000 students of which almost 3200 are freshmen (data referred to 2017/2018 academic year). At the same time, such choice has been driven by the intent to contribute to the requalification process of the East area of Naples. Thus, in order to reproduce the same development process enhanced by the settlement of the engineering faculty in the peripheral suburb of Fuorigrotta (Naples) in the early '70. Indeed, this strategic solution has led to a massive requalification and a relevant economic growth in terms of housing and commercial activities of the suburb of Fuorigrotta, since it was originally born with the aim to host families of workers of the factories located in the close Bagnoli site (Italsider, Cementis, Eternit etc..) which were dismissed in the late '60. By settling some University buildings in Fuorigrotta, the latter suburb has been eventually included within the very urban boundaries of the city of Naples⁸.

Such intervention falls into a memorandum of understanding signed on March 31th 1998 by the Italian Ministry of Education and University, the Campania Region, the City of Naples and Federico II University of Naples former Rector Fulvio Tessitore. Thanks to this agreement, the Region and The University engaged mutually in financing the requalification project whereas the municipal government of the City of Naples committed itself to set the needed urbanistic changes and the University agreed to be in charge of the acquisition of the area formerly owned by the Cirio

⁸ The pieces of information cited in this section have been drawn from the narrative of some of the in-depth interview performed to leading actors of the San Giovanni Hub (mainly professors belonging to the University governance) as well as from some paper documents provided by the same subjects.

Company. The latter was operating in the selected site for the production of tomato sauce until it was de-located in another site and eventually going bankrupt.

The final choice for the project of the Hub has fallen on the Japanese group Ishimoto Europe that proposed an extremely rational layout, with an underground parking, thus not allowing cars to be seen on level 0, structured as an open space meant to become a wide green area among the main streets of San Giovanni a Teduccio (namely Corso Protopisani and via Nuova Villa). Furthermore, this beautiful Japanese architectural style planned to build the first two levels of the buildings in lava stone, in order to call Vesuvius presence on the East side as well as local tradition, with the upper levels inserted in said lava stone with facades build with modern glass structures and contoured by coloured loggias almost forming colour spots.

The San Giovanni Hub is an attractor on a global and local scale: both local and (especially) international firms have decided to invest in the Hub on different levels of involvement. It is more than a district or a science park because the former have a territorial and industrial nature focused on the demand side (the market). The SG Hub embodies a reversed perspective since it intersects the supply side (producers of knowledge in terms of basic or applied research, IP, Spin Off firms, collaborative research, contract research and mostly Academies funded by global economic organisations -Apple, Deloitte, Cisco, TIM, FS (National train company)).

The San Giovanni Hub reflects synergy efforts and coordination in terms of national and local government policies.

This study represents a first attempt to furnish a “snapshot” of the main stakeholders interacting with the SGH, whose description is provided in the following.

The SGH Stakeholder map has been implemented in a twofold way, according to an evolutionary interpretation. The initial representation of the map follows a traditional classification (Freeman, 1984; Freeman et al, 2010) that distinguishes two sets of stakeholders: internal and external stakeholders. The former category encompasses entities within the main subject or business and in this case they refer to structures and subjects operating within the Hub though either an administrative or an educational linkage. The latter category deals with all the remaining entities that do not operate within the Hub itself but care about or are affected by its performance (e.g., consumers, regulators, investors, suppliers).

The initial map has been shaped with a “flower” structure in which the inner core includes the internal stakeholders, whereas the external stakeholders (herein STKH) are located in the petals. Such a representation expressively avoids to pointing out any linkages or connections among the different actors since said relations are still at an embryonic and un-structured stage. The decision not to mention the relations among the stakeholders of the Hub was made following the author’s participative observation and has been confirmed by all the statements provided by the interviewed sample. Also, the dimension of the single “petals” does not express the importance or the pondered weight of each stakeholder. The representation of the first version of the map, together with the indication of the Stakeholders belonging to the SGH ecosystem is visible in picture 3.2.

It must be pointed out that the number of Stakeholders of the Hub is expanding continuously, and it will be eventually higher by the time this dissertation will be presented. Thus, for the purpose of this study, Stakeholders joining the Hub later

than October 31st 2018 will not be included in the SGH ecosystem layout under investigation in our research.

Thanks to the empirical analysis carried out for the case study, a suggestion for a new STKH map was depicted, in order to translate the suggestions and aims of the stakeholders interviewed for the research into a reliable picture of the shape the Hub should strive to achieve through its strategic management.

The new version of the STKH map draws from several literature contributions coming from both the triple helix approach and its latest development (*see* Carayannis & Campbell, 2014; Leydersdoff, 2012), as well as from Goddard's representation of a Civic University network, as shown in figure 1.3 above.

For the purpose of the present study, the "Evolutionary Map" herein chosen to represent the SGH stakeholder network considers four different sets of STKH, namely: research, firms, institutions, society. Compared to Goddard's view, the STKH Map adopted in this study more rigorously separates the four sets of agents. However, the propositions and theoretical grouping made in the light of university engagement match with the propositions stated in our work. Indeed, under the general label of "society" encompasses the private sector and the institutions in a broader sense.

The map described in picture 3.3 below better shows the real interactions among the actors operating within or outside the very core of the Hub. The darker sections, that is the ones in which the different stakeholders match and blend, are the expression of the benefits and advantages of being part of the SGH system. We can argue that said sections show the strengths of the Hub. Therefore, according to an evolutionary

view, we argue that the SGH STKH Map should reflect the interaction of different *missions*⁹ (Ent-04). Indeed, an effective strategic plan can lead the SGH to manifest and exploit a real interaction among its stakeholders.

Figure 3.2. Stakeholder Map of the San Giovanni Hub in its original version (author's elaboration)



Caption:

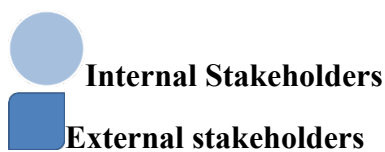
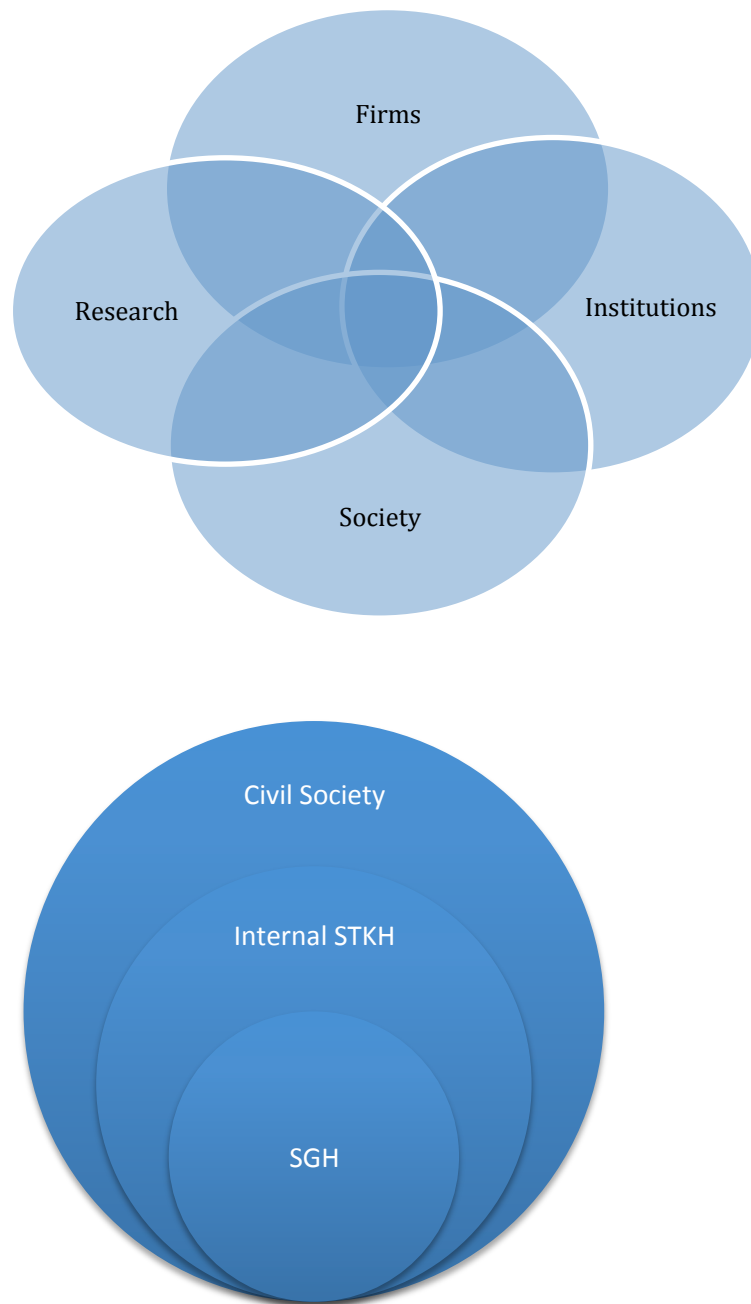


Figure 3.3 Stakeholder Map of San Giovanni a Teduccio Hub in its evolutions



Source: author's elaboration

Figure 3.3: The San Giovanni University Hub, Naples



Source: http://www.scuolapsb.unina.it/downloads/grafica/sedi/san_giovanni.jpg unina.it, reproduced with permission.

3.4. The San Giovanni Hub (SGH) Case

The main subject of the study is a knowledge-intensive Federico II University Hub, settled in the peripheral urban area of San Giovanni a Teduccio, East area of Naples, to which the study refers as San Giovanni Hub (SGH) or simply the Hub. Four main propositions are supported by the research, namely:

P.1. The San Giovanni Hub can be considered both a social and a business mission in nature.

P.2. The role of innovation process, technology transfer mechanisms and third mission objectives are able to make the SGH a unique experience in terms of university engagement.

P.3. The selected case represents both a research and entrepreneurial knowledge intensive environment.

P.4. The chosen context is able to engender and enhance value creation in terms of innovation performance and knowledge transfer challenges activities for the interacting subjects, entities and organisations which are not necessarily physically located in the same area.

The findings provided by the present investigation would attempt to respond to the broad research question concerning the main patterns and characteristics of the SGH in terms of third innovation, knowledge transfer and University engagement.

The study focuses on the issue of innovation, knowledge transfer mechanisms and university engagement led by a knowledge-intensive phenomenon in a peripheral urban area. The aim of the research is to assess the relevance of the knowledge intensive site under investigation, which is embedded in a peripheral and less developed urban context.

An empirical analysis on the San Giovanni Hub has been implemented to highlight the processes of university-led technology and knowledge transfer in a peripheral and deprived urban area.

The single case study's unit of analysis is the Federico University research centre and campus herein defined the "San Giovanni a Hub" observed according to innovation, knowledge transfer and university engagement patterns.

Data have been collected through a background study, surveys launched among the two Academy's students and semi-structured interviews to the main Stakeholders of the Hub (25 interviews performed). The rationale for the selected unit is that it represents a knowledge-intensive hub hosted by a peripheral and less developed

urban area. The target population is derived from the Stakeholder map of the San Giovanni Hub (as shown in figures 3.2 below), mainly involving:

- a. Academic staff working in the selected research hub, supporting/administrative staff, firms located in the area or connected by relational proximity, Apple Academy and Digital Academy management, students sample; Local government representatives; further primary Stakeholders; selected entrepreneurial organisations located in the surrounding area.
- b. Entrepreneurial organisations located in the selected geographical area.

Following the innovation ecosystem taxonomy discussed in Oh, Phillips, Park & Lee, E., 2016. We sought to provide a synthesis of the SGH main characteristics, in comparison with those of other prominent innovation ecosystems “types”.

Table 3.1: Why the SGH? Comparison of main patterns and features

Taxonomy of Production/business/entrepreneurial/innovation ecosystems options	Main Features and Characteristics					
	<i>Industrial production activities</i>	<i>Knowledge production activities</i>	<i>Presence of Firms</i>	<i>Presence of Research Centre</i>	<i>Presence of Higher Education Institutions</i>	<i>Presence of Company-University joint educational programmes</i>
<i>Science Parks</i>	✓	✓	✓	✓	✓	
<i>Clusters</i>	✓	✓	✓	✓		
<i>Industrial Districts</i>	✓	✓	✓			
“SGH – type”		✓	✓	✓	✓	✓

Source: author’s elaboration drawing from the taxonomy provided by Oh et al (2016), p. 3.

3.4.1. Design of the inquiry

In order to facilitate the analysis of the case study dealt with in this Chapter, the main characteristics and patterns of our research design have been synthesised in table 3.2, following the methodological instruments described in Chapter II.

Table 3.2: Research Design synopsis

Methodology				
Strategy Of Inquiry	Case Study			
	Type of study and questions to be answered	Qualitative Tool for Data Collection	Quantitative Tool for Data Collection	Data Analysis Technique
Main Characteristics	Exploratory study (What are the main patterns and characteristics)	Semi-structured open Interviews	Surveys	Thematic Analysis
Sampling	-	Academic staff working in the selected research hub, supporting/administrative staff, firms located in the area or connected by relational proximity, Apple and DIGITA Academies management staff; local government representative; further primary Stakeholders.	Apple Developer Academy and DIGITA Academy students.	

Source: author's elaboration

In order to achieve such a purposes, a qualitative analysis has been performed by means of a case study methodology on the San Giovanni Hub where data have been gathered by participant observation, narrative documents, in-depth interviews to the

main stakeholders of the Hub (25 interviews performed to date, whereas only 20 were expected at the beginning of the empirical investigation) and a survey submitted to the students of the two Academies currently hosted by the Hub, namely: Apple Developer Academy and DIGITA (in partnership with Deloitte).

The study has adopted an explorative qualitative inquiry based on a case study methodology to form a new understanding of a previously unstudied phenomenon (Myers, 2013).

The perspective chosen for this study enabled a comprehensive investigation of the SGH as it is perceived and experienced within its context.

For the objective of the investigation, semi-structured interviews were undertaken and official documents were analysed to gain exploratory insight into the emergence of the SGH phenomenon and its perceived effects in terms of value creation and knowledge transfer for the area in which the Hub is embedded.

The participants were selected using a purposive sampling technique to provide wide variability and representation of the study context of the Hub (Patton, 1990). Triangulation in the data (Yin, 2009; Patton, 1990) was achieved by examining multiple sources of data (i.e., participant observation, interviews, surveys and documents), and by consulting informants at multiple levels, to either the managerial and academic staff of the Federico II University.

The interview sample included main representatives considered to be the key stakeholders of the Hub, selected according to the more or less formalised partnership with the Federico II University. The information about the stakeholders assortment have been gathered thanks to the extremely helpful consultation with the SGH key informants. The variety of selection in the stakeholders has sought to

ensure capturing perspectives from the academic, entrepreneurial, research and policy making levels. The sample also included students attending the Apple Developer Academy and the DIGITA academy in partnership with Deloitte to which a questionnaire has been administered with to purpose of gathering the perspective of what the study has considered to be a “selected” category of students.

In total, 25 interviews were conducted, which generated about 24 hours of interview data. Respondent details and their corresponding codes are illustrated in Table 1.

The familiarity of the author with the SGH ecosystem due to her professional role as TT manager enabled access to appropriate context that were information-rich and that would yield data and informational saturation (Myers, 2013).

The primary data were collected using participant observation and documentary review (Creswell, 2003). All interviews were conducted between February and September 2018, while the surveys addressed to the students of the Apple and DIGITA Academies were submitted between May and June 2018.

This provided-an in-depth understanding of the overall San Giovanni Hub context.

As the interviews sought to explore the perception of the SGH main stakeholders in reference to the thematic items identified within the research design, they were all taken and recorded by the author with the support of a written script summarising the thematic areas and the set of questions object of the interview, as well as tables concerning technology and knowledge transfer mechanisms (shown in the tables 3.4 and 3.5 below) and a visual representation of the SGH stakeholder map and its possible evolutions, as reported in figures 3.2 and 3.3 of the previous section .

Table 3.4: Thematic areas for the semi-structured interviews

Thematic areas	Definition/Relevance for the study	Open-ended Questions set
----------------	------------------------------------	--------------------------

<p>1. Knowledge and related mechanisms of transfer and exchange</p>	<p><i>“Facts, information, skills acquired through experience or education; the theoretical or practical understanding of a subject”</i> (The Oxford Dictionary).</p> <p><i>“The knowing, as presence in the intellect of a notion, as already acquired knowledge”</i> (Treccani Encyclopaedia).</p> <p>- The concept of Knowledge dealt with herein is not limited to the learning activity.</p>	<p>- What value would you attribute to the <i>knowledge</i> factor applied to the Polo of S. Giovanni?</p> <p>- Can San Giovanni be labelled a <i>“Knowledge Intensive Hub”</i>(KIH)?</p>
<p>2. Stakeholders</p>	<p><i>Main actors (physical persons, institutions and/or organisations) interacting with the Hub. The definition of internal and external STKH depends on relations with the market or the society</i></p>	<p>- Please observe the STKH Map of S. Giovanni: do you consider the map consistent with the activities and the relations started within the Hub?</p> <p>- Could you explain what is it and in what terms your connection with the Hub unfolds?</p>
<p>3. Technology and Knowledge transfer (TT & KT)</p>	<p><i>Set of activities aimed at bringing new technology or new knowledge from research to the market.</i></p>	<p>- Which TT mechanisms, among those shown in the attached table (<i>table 3.5 below</i>) do you think are / could be applied within the Hub?</p>
<p>4. Third mission</p>	<p><i>Set of activities carried out by the university in addition to those related to teaching.</i></p> <p><i>“activities concerned with the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments”</i> (Molas- Gallart et al,</p>	<p>- Do you believe that the Pole of St. John is a third mission experience? In what terms and with what characteristics?</p>

	2002, ii-iv)	
5. Proximity	<i>Geographical, relational, cultural closeness to the Hub.</i>	- In light of the information provided on the concept of proximity applied in this study, do you think that this concept is relevant for the activities of the <i>Hub</i> ?
6. Space	<i>Value and relevance of the interaction within the Hub spaces.</i>	Express what can be, in your experience, the advantages of being an integral part of the Hub. - Do you think that the physical space in which the Pole is organised is an important element for internal and external dynamics in terms of networking and technology transfer?
7. SWOT Analysis applied to the Hub	<i>Analysis of strengths and weaknesses, threats and opportunities of the Hub.</i>	- What do you think are the main strengths, weaknesses and opportunities of the <i>Hub</i> ?
8. Policy choices	<i>Interventions promoted by the central and local government to define and apply the most effective parameters aimed at encouraging economic growth, in this case in terms of dissemination and marketing of research products.</i>	- What policy choices have guided the establishment and development of the Pole (investment and / or redevelopment)? - Which do you think should be implemented (e.g. if you were a policymaker)?

Source: author's elaboration

Table 3.5: University Knowledge and Technology Transfer Mechanisms (annex of table 3.4)

TT & KT Mechanisms	Definition
<i>Sponsored research/ Consultancy/ Contract Research</i>	An agreement by which the university receives funding for conducting a research project

<i>Licenses</i>	Legal rights to use a specific piece of university intellectual property
<i>Hiring of students</i>	Recruitment of students from the university, especially those working on sponsored projects
<i>Spin-off firms</i>	A new entity that is formed around the faculty research or a university license
<i>Networks</i>	Contacts established in a formal or informal way that are led to other Knowledge Transfer Activities
<i>Collaborative Research</i>	Research in partnership with other HEIs or Research centres
<i>Other Measures</i>	Physical migration of students to industry; Publications as a measure of research output.

Source: author's elaboration

No follow-up interviews were necessary, on the contrary, most interviewees provided several adjunctive information on the historical, political and institutional background of the Hub, spontaneously. Some of them have been recorded during the interviews, some others are off the record information of which memos and written notes have been taken with the consent of the respondent.

Whilst the semi-structured interviews were developed according to a pre-defined scheme to make sure that similar issues are covered to allow analytical comparability (Corbetta, 2003), there was flexibility to explore new issues that emerged during the interviews, data analysis and interpretation process (Creswell, 2003; Patton, 1990, King, 2004).

Since all the interviewees are Italian, the interviews were conducted in Italian, in order to yield rich information and minimise distortion. The interviews were recorded and transcribed verbatim to preserve precision of the data. Translation of the narratives into English was only completed after interpreting the data to attain precise meanings. In the phase dedicated to the organisation of the gathered data, coded have been attributed to each respondent, following the division in four main categories of stakeholders, or varying combinations of them, namely :

- Research
- Entrepreneurship
- Institution
- Society

The whole classification according to the stakeholder division e subsequent coding attribution is showed in tables

Table 3.5: Interviews Grid of the Key Informant Sample

Institution	Position	Stakeholders Taxonomy
Federico II University	Full Professor and CeSMA Director	<ul style="list-style-type: none"> • <i>Research</i> • <i>Entrepreneurship</i> • <i>Institution</i> • <i>Society</i> <p><i>or</i> varying combinations of them.</p>
Kelyon	CEO	
Materias	PhD	
CeSMA, Federico II University	Administrative staff	
AXA Matrix	Director/Division manager	
Federico II University	Full Professor, DIGITA Director	
Unione Industriali Napoli	Former President	
Federico II University, of Campania New Steel Incubator (CNS)	Full Professor, former CNS President	
Materias	CEO	
CeSMA, S. Giovanni Hub	Manager	
Campania New Steel	Consultant	
Federico II University	Administrative staff	
Federico II University	Full Professor, Apple Academy Director	
Intesa S. Paolo Banco di Napoli	Innovation Specialist	
Regione Campania	Regional Councillor for Start Up, Innovation and Internationalisation,	
Deloitte	Manager	
Federico II University	Rector and Full Professor	
CISCO	Manager	
Federico II University	Research/ PNI (<i>Innovation National Prize</i>) Manager	
Naples Municipality/Federico II University	Municipal Councillor for Urbanisation	

Federico II University	Researcher/ Megaride Spin Off CEO	
Federico II University	Full Professor and Unina Corse President	
Federico II University/Apple Developer Academy	Associate Professor/ Apple Academy manager	
Gematica/ Consorzio CLARA	CEO/ Managing Director	
Unione degli Industriali di Napoli	President	

Table 3.6: Interviews grid Description of participants and their corresponding codes

#	Code	Participant Description	Stakeholder	Length
1	Uni-Academic-01	Full Professor and Research Centre Director	Research	25'
2	Ent-01	CEO and owner of a firm	Entrepreneurship	58'
3	Ent-02	PhD, Consultant for a start-up firm	Entrepreneurship	65'
4	Uni-Administrative-01	Administrative staff	Institution	53'
5	Ent-03	Division Manager of a Corp	Entrepreneurship	120'
6	Uni-Academic-02	Full Professor, Director of an Academy	Research	60'
7	Inst-01	Former President of an Entrepreneurs Association	Institution/Society	130'
8	Uni-Academic-03/Ent-03	Full Professor, former President of an incubator	Research/Entrepreneurship	52'
9	Ent-04	CEO	Entrepreneurship	30'
10	Uni-Administrative-02	Security Manager	Institution	30'
11	Ent-05	Consultant	Entrepreneurship	50'
12	Uni-Administrative-03	Administrative staff	Institution	38'
13	Uni-Academic-04	Full Professor	Research	26'
14	Inst-02	Innovation Specialist for a Financial Institution	Institution	58'
15	Gov-01	Director of Division in a Government Institution	Society	45'
16	Ent-06	Manager	Entrepreneurship (Consulting)	70'
17	Uni-Academic-05	Rector and Full Professor	Research/Society	32'
18	Ent-07	Manager	Entrepreneurship	70'

19	Uni-Academic-06	Research/ PNI (<i>Innovation National Prize</i>) Manager	Research/Society	68'
20	Gov-02	Director of Division of the City council Institution	Institution	90'
21	Uni-Academic-07/Ent-08	Researcher/ Spin Off CEO	Research/Entrepreneurship	65'
22	Uni-Academic-08	Full Professor and Unina Corse President	Research/Society	55'
23	Uni-Academic-09	Associate Professor/ Apple Academy manager	Research/Society	62'
24	Ent-09	CEO	Entrepreneurship	58'
25	Inst-03	President of an Entrepreneurs Association	Society	65'
Total time allocated to the semi-structured interviews			Tot. minutes	1475'
			Tot. hours	24,6'

Regarding the surveys, questionnaires were submitted in English for both sub-samples, e.i. the one attending the Apple Developer Academy and the one attending the Digita Academy. In fact, as emerged from the personal data collected at the beginning of the surveys and shown in Appendix 1 and 2, the nationality of all the students belonging to the latter academy is Italian, whilst students attending the former come from different Countries.

3.4.2 The Method of the *San Giovanni Hub* Case Study

Thus, the components of the method adopted for the inquiry are enumerated as follows.

Unit of Analysis: the Federico II University Technology Hub of San Giovanni a Teduccio, Naples (SGH)

Research question: What are the main patterns and characteristics of the SGH in terms of innovation, knowledge transfer and University engagement?

Propositions supported by the present research:

P.1. The San Giovanni Hub can be considered both a social and a business mission in nature.

P.2. The role of innovation process, technology transfer mechanisms and third mission objectives are able to make the SGH a unique experience in terms of university engagement.

P.3. The selected case represents both a research and entrepreneurial knowledge intensive environment.

P.4. The chosen context is able to engender and enhance value creation in terms of innovation performance and knowledge transfer challenges activities for the interacting subjects, entities and organisations which are not necessarily physically located in the same area.

Data collection:

Background study, semi-structured interviews to the main Stakeholders of the San Giovanni Technology Hub and questionnaires submitted to a specific category of students, e.i. students attending the Apple Developer and the DIGITA Academies.

Research Methodology:

Universe of the study: Stakeholders connected to the San Giovanni a Teduccio Hub of the Federico II University of Naples

Rationale for the selection: main actors interacting with a newly founded knowledge-intensive hub located in a peripheral and less developed urban area
Population:

The target population is derived from the Stakeholder map of the San Giovanni Hub, mainly involving:

- a. Academic staff working in the selected research hub, supporting/administrative staff, firms located in the area or connected by relational proximity, Apple Academy and DIGITA Academy organisational staff, students sample; local government representative; further primary Stakeholders centres; entrepreneurial organisations located in the selected geographical area
- b. Apple Academy and DIGITA Academy students sample.

Table 3.7: Sample size:

Unit of Analysis	Sample Unit
San Giovanni a Teduccio University Hub	Economic/non-economic organisations next to the hub in terms of geographical proximity
	Researchers in the selected research centre
	Economic/non-economic organisations connected to the hub in terms of relational, organisational or cultural proximity (Caragliu & Nijkamp, 2015)
	Supporting/administrative staff
	Apple Developer and DIGITA Academies managing directors
	Local government representatives and further primary Stakeholders
	Apple Developer and DIGITA Academies students

Tools for data collection:

- a. direct sources:
- participant observation;
 - semi-structured interviews and surveys addressed to the Apple and DIGITA Academy students
- b. indirect sources: document review

- Background information and data on the local government policies implemented in the area hosting the hub and on the primary and secondary stakeholders connected to the hub;

- Data on Apple Academy and DIGITA Academy students.

Activities:

i. Investigate the relevance the Hub for economic or social organisations and institutions located in the same area or interacting with it, notwithstanding the physical distance.

ii. Investigate the role of the Federico II San Giovanni Hub in terms of University engagement for the context in which it is embedded, by analysing:

a. the SGH phenomenon;

b. the innovation and knowledge transfer patterns and characteristics of the SGH;

c. the policy and government roles to help building a framework for future analysis.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF FINDINGS

4.1 Introduction to the investigation of the “SGH” phenomenon

As previously stated, the single case study’s unit of analysis is the Federico II University Hub located in San Giovanni a Teduccio, a peripheral and deprived suburb in the East urban area of the city of Naples. In order to achieve such a purpose, a qualitative analysis has been performed by means of a case study methodology on the San Giovanni Hub, where data have been gathered by participant observation, narrative documents, semi-structured interviews to the main stakeholders of the Hub. A total of 25 interviews have been performed at the end of the empirical phase, whereas only 20 respondents were expected at the beginning of the investigation) and a survey was submitted to the students of the two Academies currently hosted by the Hub, namely: Apple Developer Academy and DIGITA (in partnership with Deloitte).

The first part of this Chapter is dedicated to describe the outcomes of the thematic analysis (Section 4.2) and of the surveys addressed to the “Academy” students (Section 4.3).

The second part of the Chapter is dedicated to the discussion of the whole *corpus* collected during the research (Section 4.4) and to the conclusion to be drawn (Section 4.5). Finally, an account of the limitations of the study and some suggestions for future lines of research are presented in the closing Section.

4.2. Outcomes of the thematic analysis performed on the semi-structured interviews

The analysis conducted for our case study identifies themes at the semantic level, describing what has been said to focus on interpreting and explaining it. The main areas of the interviews have served as categories on which themes have been later detected.

Following a thematic analysis approach (King, 2004; Myers, 2013), data were coded and analysed in a ‘template’, to identify the leading categories, patterns, themes, and relationships (King, 2004). Some initial categories and themes were identified from the literature, then they were reviewed and modified in accordance with the collected data (King, 2004). In analysing the transcripts, the aim was to identify elements within the thematic areas object of the interviews able to express the perception of the SGH stakeholders. The coding map for the thematic analysis of the semi-structured interviews performed for the empirical investigation of the SGH is illustrated in table 4.1, below.

Table 4.1: Coding map for the thematic analysis of the semi-structured interviews performed for the empirical investigation of the SGH

#	Main categories drawn from the interviews topic headings	Code Level 1	Code Level 2	Code Level 3	Illustrative quotes
1	Value of Knowledge for the Hub	Knowledge Intensive Hub			
2	Stakeholders				
3	Technology and Knowledge transfer				
4	Third mission				

5	Proximity				
6	Space				
7	Elements of Strength of the SGH				
8	Elements of Weakness of the SGH				
9	Opportunities for the SGH				
10	Threats/Risks for the SGH				
11	Policy choices				

Following the coding phase, the final layout of the thematic analysis is provided in table 4,2, with the indication of the starting categories, themes, two levels of sub-themes and illustrative quotes retrieved from some significant passages of the interview transcripts.

Table 4.2 Categories and themes emerged from the data analysis of interviews to the SGH main stakeholders

#	Main categories	Themes	Sub-themes level 1	Sub-themes level 2	Illustrative quotes
1	Value of Knowledge for the Hub and definition of Knowledge intensive Hub	Knowledge Intensive Hub (KIH) Knowledge as an essential driver for the development of the Hub High level competences on actual themes Knowledge contamination	Knowledge attractor and diffusion function, alternative to the traditional knowledge KIH that has bypassed territorial borders	Enrich the knowledge portfolio of students and researchers according to the needs and view of clients (companies) Expression of higher education in a territory with a high rate of non-completion of school	<i>- I believe this place to be a real gem and a the “feather in the cap of the Rector’s strategy”. (Ent-06)</i> <i>- SGH offers quality competences that elevate the competitive standard of our firms, if the latter are able to seize them!</i>

					(Ent-01) Uni-Academic-02
2	Stakeholders Map	<p>SGH ecosystem</p> <p>Education as an aggregating role</p> <p>Reliability good reputation</p> <p>Vision needed</p> <p>4-helix representation of “institutions, research, firms, society”</p>	<p>Value of “people”</p> <p>Network built by Institutions, Companies HEI and research centres</p> <p>Proximity banks to be included</p> <p>Define structural linkages among STKH</p> <p>Involve STKH in a strategic way (es. Banks)</p>	<p>Activities aiming at sustaining the ecosystem</p> <p>Attractiveness potential towards the Hub’s stakeholders to be measured with tangible outcomes</p> <p>Distinction among companies directly or indirectly involved</p>	<p>- <i>I consider SGH to be an ecosystem.</i> (Ent-06)</p> <p><i>The presence of Cisco in Naples has engendered an educational linkage for the first time</i> (Ent-09)</p>
3	Technology and Knowledge transfer	<p>Paucity of investments in research</p> <p>Matching professional profiles with companies’ needs</p> <p>Adjust academic research to business research</p>	<p>Sponsored research, teaching</p> <p>Pivotal role of “Hiring of students” mechanism</p> <p>Spin off facilitation processes</p>	<p>Push and pull approaches to research</p> <p>Academies to provide external resources and founding</p> <p>Networking of informal relations by the academies</p>	<p>- <i>“Weasel yourself in” as it is happening in SG, is the most efficient way to drive the change.</i> (Ent-06)</p> <p><i>SGH must become the TT Hub of Federico II</i> (Uni-Ac-02)</p>
4	Third mission	<p>SG as a Third Mission example</p>	<p>Investment of big players</p>	<p>Social impact boosted starting from culture in schools, university and in the civil society</p>	<p>- <i>A company that does not invest in its very territory is doomed to fail.</i> (Ent-06)</p> <p>- <i>SGH is the</i></p>

					<i>future that no one knows yet in which way will reveal itself (UniAc-03/Ent-03)</i>
5	Proximity	<p>Combination of physical, cultural and relational proximity of some “core” activities with a sort of remote management.</p> <p>Role of cultural proximity</p> <p>Prevailing role of geographical proximity</p>	<p>Combination of a Campus model with a urban regeneration process</p> <p>SGH as an aggregation element</p>	<p>No need for territorial elements</p> <p>Focus on what the Hub can give to the territory</p>	<p>- <i>University represents a proximity element among people, social state and institutions. (Ent-06)</i></p> <p><i>In a win/win logic the gaps among academia, industry and civil society can be filled through third mission (or CSR) logics. (Ent-09).</i></p>
6	Space	<p>Fundamental role of Space in SGH</p> <p>Space to help integration</p> <p>Respect of the physical space</p> <p>SGH as an open, usable space</p>	<p>Need to make University a hotspot to bring together people also for business and social events</p> <p>Boost external facilities and commercial activities</p> <p>Need to find an appropriate aggregation function</p> <p>SGH space for aggregation purposes rather than work</p>	<p>The demand of facilities is evolving according to the new needs brought by companies and professionals in the process of settling within the hub</p> <p>Space adjusted to meet companies’ needs</p>	<p>- <i>Space is a driver for integration (Ent-06)</i></p>

7	SWOT Analysis applied to the Hub	<p>Value of the Federico II brand</p> <p>The physical representation of the ability to impact on the territory through investments in education and culture</p>	Power of the Federico II brand when associated to the SGH	<p>Start a motivational process</p> <p>Fight against the resistances to change coming from the inside</p> <p>Resilience is needed</p> <p>Investments in the surrounding territory promoting pro-bono/social activities</p>	<p>- <i>SGH is a winning and reliable brand</i> (UniAc-03/Ent-03)</p> <p>- <i>The challenge is the ability to aggregate forces that are external to the area</i> (UniAc-03/Ent-03)</p> <p><i>SGH Must attract globally and give back locally</i> (Uni Ac-02)</p>
7	Elements of Strength of the SGH	<p>The presence of a m/l term strategy</p> <p>Federico II branding</p> <p>Political and administrative continuity</p>			
8	Elements of Weakness of the SGH	<p>The highest weakness is endogenous because not all forces are heading towards the same target In case SGH will not be able to complete the integration process</p> <p>Sudden critical issues linked to political</p>	social, media and “sympathetic” impact		

		choices			
9	Opportunities for the SGH	To grasp change in a positive way Driver for positive emulation Investment in physical space of the surrounding area			
10	Threats/Risks for the SGH	Failure Resistance and opposition of a marginal part of the local population			<i>Need for a strategy to avoid being a “condominium” (Uni Ac-02)</i>
8	Policy choices	Speed as a key word Absence and inaction of local government Unwillingness to take risks in investments Leading role and decisions of the central government	Need to be quick in simplifying key decisions, Taking some risks at all levels (central or local government and university) Policy choices as a virtuous example to be emulated	University and the private sectors as main development drivers for the Hub	- <i>Being a ZES is a trait d’union between central and regional policy (Uni-Academic-02)</i> - <i>It is important to have a strategic plan, being it right or wrong. (Ent-06)</i> - <i>SGH is a winning and reliable brand thanks to the political coherence sown in the last 28 years (UniAc-03/Ent-03)</i>

The table above summarises a mapping proposal that can be adopted by the SGH Governance in order to understand which subjects can be involved in the system.

Some of the extracts of the interview responses have been selected to give a glimpse of the sentiment and perceptions expressed by the subjects representing a significant sample of the main stakeholders interacting with the SGH. The following passages refer to said extracts, concerning remarks on diverse categories dealt with in the thematic analysis.

1. Stakeholder map and involvement:

“Stakeholders of the Hub must have the opportunity to use environments and contamination. I would insert the Digital Innovation Hub of the Unione Industriali of Naples (Naples Employers Association), if there is a dedicated space in SGH, and the order of the Engineers of Naples. I agree with the prospective organization of the Stakeholders in terms of quadruple helix. To transform the organization of SG you can develop a list of activities in SG: Didactics, Research, Congress Centre ... SG could develop by indicating specific areas / sectors in which private companies or the community can be inserted, from specific laboratories to elements of contamination. This also means transforming the organization a bit. A concrete example is the PNI (Innovation National Prize), which also provides evening activities, with all the logistical and organizational needs required” (Uni-Academic-06).

“I agree with the setting of the "Civic University", especially here in SG, although I see a good synergy between local government, regional and governance of the university in terms of ecosystem” (Uni-Academic-09).

According to what I know, the contamination / cross-fertilization is evident, especially between Apple, Cisco and Tim (with Tim WCap): since September Tim

joins with Cisco. In SG it is not the standard portfolio of courses provided by Cisco but it is a training that would not be possible without the contribution of the University. Known continuous contamination, even with local government that promotes challenges or eg. with hospitals etc .. Total contamination generates a virtuous mechanism (Uni-Academic-09).

2. Technology Transfer Mechanisms and Knowledge Transfer Mechanisms

TT and TM: an activity of SG in terms of TM could concern the sponsorship of SG in a strategic way with an effective activity of MKTG that promotes, also through channels such as student associations or former alumni. Starting with a site dedicated to SG could be a starting point. The indirect MKTG is made by the great players established with the academies. The website should express the Charter of Services offered by the HUB, the provision of spaces (Classrooms, cafeteria) to the public presentation of laboratories to potential inter-students or schools (eg FAI Days) (Uni-Academic-06).

“It is necessary to help the territory develop its human capital by relying on a link to the international circuit. The adaptive approach can help rethinking relations with the industrial sector” (Ent-09).

4. Proximity and Space Management

“It is necessary to distinguish between internal and external Proximity. A geographical Proximity must first occur, because a cultural element is created within a physical space. If you identify SGH where you can go to meet, then we talk about geographical Proximity” (Uni-Academic-06).

“Internal proximity - which includes the geographical and cultural P. –is an example is the fact that the most interesting results in the Apple Academy come from Eastern students” (Uni-Academic-06).

The proposal to stimulate an external user is also in the offer of use of spaces such as laboratories or open cafeteria (a bit like the hotels bars that are open to non-exclusively Hotel guests). It is necessary to develop housing mechanisms in which it is necessary to involve the private system (an example is also how the UNIMI space has been reorganized on the Bovisa campus). I am convinced that in an environment such as ours, the "face-to-face" is indispensable, and that the external interest towards the Hub must be stimulated.

“External: provide important proposals for the population of SG:

sports facilities, external campus, dedicated shuttles, etc, thus developing the business side.

At the moment the strategy seems very fragmentary to me.

Modification of the organization of the Polo. It is necessary to express the usability of the facilities and laboratories for external companies not established in SG: paying for this is also an incentive that encourages to intensify the collaborative activity and the investment made.

The university should have a structure specifically dedicated to the granting of space, similar to a commercial office. Other stimuli can come from the development and the incentive to the establishment of leisure areas and an adequate

accommodation offer in terms of bars, restaurants, hotels ..” (Uni-Academic-07 / Ent-08).

“The value of the physical space in SG is fundamental although it does not find physical dislocation of the bodies usable: it would require a building / central aggregating structure for leisure activities, which at the moment is lacking. I agree with the fact that not all elements are upgraded at the moment.

In my opinion there is a lack of financial investment in laboratories (shared laboratories): it is necessary to create laboratories from scratch to encourage the Lab population in SG, as well as resources dedicated to writing and submitting tenders on SG, which has all the characteristics to win hands down.

SG is a project of territorial rebirth” (Uni-Academic-07 / Ent-08).

5. SWOT Analysis

“The place contains interesting "entities" in terms of networking and potential professional meetings.

A collateral strength is that it represents a blank sheet of paper: there is no precedent in terms of established habits and practices.

I see weakness in the unremarked external context; and in decentralisation: everything is "traditionally" elsewhere, in other departments in Fuorigrotta, because there are no incentives for popular SG. Inertia is to be overcome..

An opportunity is the the "take-off": if SG explodes it can be a "bomb", also in terms of quality of working life. The threat is that you pass the political enthusiasm, or the policy and the governance that now push this place” (Uni-Academic-06).

Table 4.3: SWOT Analysis drawn from the thematic analysis

Strengths	Weaknesses
<i>location expertise in research and teaching research comprehensiveness, quality, and growth logistical accessibility interdisciplinary and experiential education Service provider to the university and the larger community in terms of facilities (laboratories, physical spaces)</i>	<i>underfunding in education and research understaffing at many levels inadequate resources – including physical, financial, and human resources; inadequate capital funds underdeveloped campus life and facilities</i>
Opportunities	Threats
<i>economic and social development of the urban area hosting the hub relations and partnerships with local employers –in the private, nonprofit, and public sectors international relevance (and visibility) collaboration and synergies with local government</i>	<i>reduced public funding inadequate employment of the hub facilities and staff growing competition of similar multidisciplinary hubs</i>

6. Policy choices

“Policy choices. What to aim for? Also in terms of collaboration with the local government? It is necessary to aim at creating a wider centre that goes beyond the typical university activity. Opportunities were used that went beyond the initial objectives. These opportunities need to be exploited systemically. The hope is that "chance" opportunities will become systemic.

It is necessary to contextualise, rationalize and coordinate the activities and requests, or by setting the limit of using the resources formed or in various capacities involved. Furthermore, SGH could be a valid tool to provide training dedicated to local companies (Uni-Academic-06)”

“Governance should push / oblige the population of this place, in terms of internal policies, because the problem lies in the "anarchy of the academic system"

In terms of external policies, I would favour tax relief to promote the redevelopment and renovation of the surrounding properties. Investment in infrastructure and logistics: ad. Eg. Upgrading of the metro and cycle path.

Further input / observations beyond the SG context:

- from the management point of view, it is in the fact that an academic approach is needed that encourages entrepreneurship;

- Change the regulatory system patents and spin offs.

- A call for the provision of SG facilities for the exclusive use of under 35 (MKTG operation) on the University website would make it much more appealing” (Uni-Academic-07 / Ent-08).

On Policy

Some very experienced respondents claim that it is necessary to implement a development plan for the SGH similar to the one set up for Bagnoli, a former industrial site in the West area of the city of Naples, in which municipal and regional administrations are coordinating their efforts together with the central government.

As an example of this shared opinion, we have chosen a passage of the interview with (Ent-04), claiming that: *“It is necessary to give content to the ‘SG container’. I imagine a SGH Plan similar to the strategic plan conceived for the Bagnoli, where the Councillors for industry, for innovation and for social policies coordinated their work to manage this development plan with the aim to accelerate the growth process (...) This can be a winning model”*.

In the Governance chain different types of financing sources can be identified, depending on the specific purposes:

1. EU funds activities that make the continent competitive
2. The central administration finances mainly initiatives of national interest but also basic research activities to create and keep alive the creative capacity of researchers
3. The Regional Government finances activities that promote territorial competitiveness.

Although all the mentioned measures can contribute to enhance the growth of the SGH, which could provide more services and outputs in terms of knowledge transfer and third mission if a real convergence was put in place.

4.3. Report on the Apple Developer & Digita Academies Surveys

4.3.1 Apple Développeur Académie Questionnaire

Premises:

- On a total population of 378 students (sub-divided in: 342 “standard” students and 36 “master” students¹⁰) attending the Apple Academy for the 2017/2018 programme, 240 consented to answer to the survey.
- The survey was launched through the online Survey Monkey platform directly managed by the Apple Academy, in order to preserve at best privacy and anonymity requirements.
- The total sample of 240 respondents answered to questions regarding their personal information (gender, age, nationality, education and field of study), whereas only 205 of them agreed to complete the whole survey;
- Additionally, 21 students of the same sample agreed to provide an optional answer to the final open question concerning further comments or suggestions.

Q.1 Gender

85% of the sample of students are male, only 13% are female.

Q.2 Age

Most students are aged between 23 and 25. Less than 10% are in their 30ies and only 5 upon the total sample of 230 are aged between 40 and 50 years old. Thus, in compliance with the acceptance criteria for attending the Academy, whose only limits are: being aged less than 18 and not owing a high school diploma.

¹⁰ The difference between *standard* and *master* students attending the Apple Developer Academy mainly concerns some of the contents of the programme which has been conceived to be more focused on specific topics for those who already own a solid background in coding and programming, thus falling in the “master students” category.

Q.3 Nationality

Italy is the Country where most students come from. However, the share of students coming from Brazil and other Latin America Countries is equal to the share of students coming from Western and Eastern Europe.

Q.4 Italian Region of origin

Most Academy students come from Campania region, i.e. the region where the SGH is located, whereas more than 10% of the remaining students come from Northern or central regions, where job opportunities and economic parameters have been traditionally more favourable.

Q5. Educational Degree

Most respondents are undergraduate or graduate students in the process of completing their diplomas. One student owns a doctorate degree and one is not enrolled at university.

Q6. Big area of study in university

83% of the Apple Academy sample comes from a STEM background. However, the share of non -STEM students is still significant considering the focus of the Academy on coding and programming.

Q8. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is generated?

86% of the sample agrees with the leading propositions of the study, claiming that the SGH is a place where knowledge is created and concentrated.

Q9. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is concentrated?

Most students agree with the leading propositions of the study, claiming that the SGH is a place where knowledge is created and concentrated.

Q10. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is shared within and beyond its physical borders”?

A consistent rate of Academy respondents strongly agrees with a further proposition, stating that SGH is a place where knowledge is shared beyond its physical borders. Such claim implicitly supports the knowledge spillover and geographical proximity paradigms described in the theoretical framework (Cap. I).

Q11. According to the following definition of Stakeholder: “any group or individual who can affect or is affected by the achievement of the organization's objectives” (Freeman, R.E., 1984: 46), would you consider the students of the Apple Academy as stakeholders of the San Giovanni Hub?

A cumulative share of 76% of Apple Academy students define themselves as Stakeholder of the SGH, thus recognising the value of the whole context surrounding their very experience within the Academy.

Q12. How would you rate the social impact of the San Giovanni Hub in terms of “activities concerned with the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments” (Molas- Gallart et al, 2002)?

Most of the interviewed students (71%) recognises a high value to the social impact of the SGH. Even though Q12 implicitly deals with the concept of University third mission, as defined by Molas- Gallart et al. (2002), we decided to provide the meaning underneath the concept rather than overwhelm respondents with an additional definition.

Q13. Among the following items and according to your opinion, please select one or more results implemented by the Hub in terms of social impact:

In order to specify the general content of Q12, question n. 13 allows respondents to select one or more mechanisms and activities that play a training role in terms of university third mission. In this sense, education and training, the support to the creation of start-up firms and the dissemination within the academic community are considered to be the most performing results implemented by the Hub.

Q14. According to the concept of Proximity, defined as geographic, relational and cultural closeness internal to the San Giovanni Hub and external within the territory in which the San Giovanni Hub is embedded, how would you rate the relevance of

proximity to San Giovanni Hub for the activities and the stakeholders interacting with it?

Despite the answers provided in Q10 in reference to knowledge spillovers, when it comes to proximity to the SGH, in terms of both geographical, cultural and relational closeness, almost 40% of the sample rates its value somewhat relevant. A slightly smaller sample (35%) rates proximity to the SGH as very relevant, whereas an even smaller sample (13%) believes proximity to be extremely relevant.

Q15. How much do you think that physical space in San Giovanni Hub is helpful to improve the transfer of knowledge - i.e. conveying notions, facts and skills from an individual or group of people to other individuals or groups of people-?

The answers provided by Apple Academy students in Q15 underpin one of the propositions of the thesis that considers the physical space of the SGH as a very (50%) or extremely (26%) helpful means to transfer knowledge. Such statement refers to the concept of “Ba” developed by a Japanese philosophical literature and transposed in managerial terms by Nonaka & Konno (1998) and Nonaka, Toyama & Konno (2000).

Q16. Among the following items, please select one or more relevant ways in which physical space in San Giovanni Hub can be exploited

Following the discourse on the concept of “space”, in Q16 respondents provide a selection of optional ways in which physical space can be better exploited in the SGH. Most Academy students believe that organised events for both academic and non-academic audience as well as leisure and/or relax shared areas are the best choices.

Q17. How much do you agree about the capability of the Apple Academy to improve students' Knowledge?

As a final question, students were asked whether the Apple Developer Academy, i.e. one SGH key actors, is able to improve their knowledge. Most respondents firmly agree upon such a statement, thus enhancing the proposition according to which SGH main stakeholder contribute to an efficient knowledge transfer process within the very Hub.

Q18. Please, feel free to add further remarks on one or more of the issues dealt with in the present survey

An optional question was included in the survey, in order to let respondents free to add further remarks on any of the topics dealt with in the questionnaire. Notwithstanding the fact that only 21 respondents provided an answer upon a total sample of 240, we found said responses extremely interesting. In the process of sharing the results of the survey with the Apple Academy general manager and some mentors, those optional remarks have been the object of a stimulating debate and a constructive reflexion on some of the practices implemented within the framework of the Challenge Based Learning (CBL), a multi-disciplinary approach to teaching and learning.

We decided to enclose hereto two of the 21 remarks made by the respondents, for the purpose of underlining the perspective and expectations animating some of the now alumni of the Apple Academy:

- *R. 14: Bureaucracy is killing southern countries (including mine: France). If Italy starts fighting back, what better place than San Giovanni? Not like me*

"spitting in the soup", but many, many issues could have been avoided with proper organisation — including students if staff is missing! Yet I MUST finish on a positive note: it's been a privilege to be here, in the result of politicians doing their job (for once, there, I said it) and giving an interesting mix of people opportunities in a place where they're sadly needed. I hope we all helped change San Giovanni a bit. I hope news of Apple Academy give perspective to the youngster who tried to steal my computer the day before Academy started. My place is probably more comfortable than his, but it doesn't have to be that way.

- *R. 15: "Please, consider asking about networking generated inside of the Academy between colleagues what for me at least is really important. If I have project to do I will consider inviting colleagues from here to work together after the Academy".*

4.3.2. DIGITA Academy Questionnaire

Premises:

- On a total population of 46 students attending the DIGITA Academy for the 2017/2018 programme, 38 agreed to answer the questions regarding their personal information (gender, age, education and field of study) and to complete the survey;
- Additionally, 5 students of the same sample agreed to provide an optional answer to the final open question concerning further comments or suggestions.

- The survey was administered and collected manually during the last day of classes before students would start their internship programme. Privacy and anonymity requirements were preserved in the whole process.

-

Personal data: Gender

55% of the sample of students are male, 45% are female.

Comparison with Apple Academy: Even considering a gap of 10%, the population sample of Digita Academy is significantly more heterogeneous than the Apple Academy's one.

Personal data: Age

Most sample students are aged between 22 and 27. However, about 25% of them are in their 30ies. The younger age of the respondents is 22 whereas the older is 35. Thus, in compliance with the acceptance criteria for attending the Academy, whose only limit is: owing a Bachelor's degree.

Comparison with Apple Academy: The average age of Apple Academy and Digita Academy is mid 20ies. However, there is a higher concentration of students aged more than 30 in the DRGITA Academy population sample.

Educational Data: Bachelor's Degree

Most respondents are undergraduate or graduate students in the process of completing their diplomas. One student is enrolled in a PhD programme. 58% of the respondents own a BA in Engineering, 34% in Business administration and the remaining 8% in Humanities (education science and cultural heritage mostly). The

share of non -STEM students is higher in comparison to Apple Academy's sample, in spite of the focus of the Academy on digital transformation

Educational Data: Master's Degree

Within the whole sample, only 33% of the Digita Students also own an M.A. degree, whereas 67% of them have not completed their M.A. yet. As for the B.A. background, the rate of students attending or owning an M.A. in engineering is 53%, while the remaining share has or is in the process of concluding an M.A. in Business Administration (42%) or Humanities (6%).

Comparison with Apple Academy: Since 83% of the Apple Academy sample comes from a STEM background, Digita Academy student sample expresses a population with a more diverse and heterogeneous educational background.

Q1. According to the concept of Knowledge defined as "facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject" (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is generated?

79% of the sample agrees or strongly agrees (18%) with the leading propositions of the study, claiming that the SGH is a place where knowledge is created and concentrated.

Comparison with Apple Academy: Such a perception is consistent with the Apple Academy's sample.

Q2. According to the concept of Knowledge defined as "facts, information, and skills acquired through experience or education; the theoretical or practical

understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is concentrated?

Most students agree (73%) or strongly agree (19%) with the leading propositions of the study, claiming that the SGH is a place where knowledge is created and concentrated.

Comparison with Apple Academy: Such a perception is consistent with the Apple Academy’s sample.

Q3. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is shared within and beyond its physical borders”?

64% of Digita Academy respondents agrees with a further proposition, stating that SGH is a place where knowledge is shared beyond its physical borders, even though a higher rate of them declare to be neutral upon this statement.

Comparison with Apple Academy: DGITA Academy sample is less convinced about such claim in comparison to Apple Academy student sample.

Q4. According to the following definition of Stakeholder: “any group or individual who can affect or is affected by the achievement of the organization's objectives” (Freeman, R.E., 1984: 46), would you consider the students of the Apple Academy as stakeholders of the San Giovanni Hub?

A cumulative share of 84% of DIGITA Academy students define themselves as Stakeholder of the SGH, thus recognising the value of the whole context surrounding their very experience within the Academy.

Comparison with Apple Academy: This perception is similar to the one expressed by the Apple Academy students sample.

Q5. How would you rate the social impact of the San Giovanni Hub in terms of “activities concerned with the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments” (Molas- Gallart et al, 2002)?

Most of the interviewed students (73%) recognises a high value to the social impact of the SGH. Even though Q12 implicitly deals with the concept of University third mission, as defined by Molas-Gallart et al. (2002), we decided to provide the meaning underneath the concept rather than overwhelm respondents with an additional definition.

Comparison with Apple Academy: This perception is similar to the one expressed by the Apple Academy students sample (71%).

Q6. Among the following items and according to your opinion, please select one or more results implemented by the Hub in terms of social impact:

In order to specify the general content of Q5, question n. 6 allows respondents to select one or more mechanisms and activities that play a training role in terms of university third mission. In this sense, education and training, dissemination within

both the academic and non-academic community, contract research and consultancy are considered to be the most performing results implemented by the Hub.

Comparison with Apple Academy: This perception is similar to the one expressed by the Apple Academy students sample only with regards to education and training and dissemination.

Q7. According to the concept of Proximity, defined as geographic, relational and cultural closeness internal to the San Giovanni Hub and external within the territory in which the San Giovanni Hub is embedded, how would you rate the relevance of proximity to San Giovanni Hub for the activities and the stakeholders interacting with it?

In line with the answers provided in Q3 in reference to knowledge spillovers, the value of proximity to the SGH, in terms of both geographical, cultural and relational closeness, is considered to be very relevant by almost 56% of the sample. A slightly smaller sample (33%) rates proximity to the SGH somewhat relevant, whereas only 8% believes proximity to be extremely relevant.

Comparison with Apple Academy: This perception is not distributed in the same way when it comes to the Apple Academy students sample, whose less than half attributes a high relevance to the proximity to the SGH.

Q8. How much do you think that physical space in San Giovanni Hub is helpful to improve the transfer of knowledge - i.e. conveying notions, facts and skills from an individual or group of people to other individuals or groups of people-?

The answers provided by Apple Academy students in Q8 underpin one of the propositions of the thesis that considers the physical space of the SGH as a very (33%) or extremely (17%) helpful means to transfer knowledge. Such statement refers to the concept of “Ba” developed by a Japanese philosophical literature and transposed in managerial terms by Nonaka & Konno (1998) and Nonaka, Toyama & Konno (2000).

Comparison with Apple Academy: Digita Academy respondents are less keen on associating the SGH with an intense knowledge transfer process.

Q9. Among the following items, please select one or more relevant ways in which physical space in San Giovanni Hub can be exploited

Following the discourse on the concept of “space”, in Q9 respondents provide a selection of optional ways in which physical space can be better exploited in the SGH. Most Academy students believe that organised events for both academic and non-academic audience as well as leisure and/or relax shared areas are the best choices.

Comparison with Apple Academy: The answers of the two samples correspond in almost every aspect.

Q10. How much do you agree about the capability of the Apple Academy to improve students' Knowledge?

As a final question, students were asked whether the DIGITA Academy, i.e. one SGH key actors, is able to improve their knowledge. Only 64% of the respondents agree upon such a statement, while 31% has provided a neutral answer.

Comparison with Apple Academy: The share of DIGITA students believing in the ability of the academy to improve their knowledge is sensibly lower compared to the share of Apple academy respondents agreeing to the same statement.

Q11. Please, feel free to add further remarks on one or more of the issues dealt with in the present survey

8% of the same sample agreed to provide an optional answer to the final open question concerning further comments or suggestions. Only 5 answers were provided on a total of 38 respondents, mostly claiming the need for shared leisure and relax areas within the Hub.

4.3.3. Data analysis

Limitations

The questionnaires described in the previous section were administered and conducted on a significant sample of Apple and DIGITA Academy students at the end of the 2017-2018 academic year.

The first limitation of the empirical analysis stands in the population of the two groups, which is significantly different for dimension, educational background, age and gender.

Furthermore, the questions addressed to both groups have been conceived to be extremely clear and understandable, despite the lack of specific knowledge of the leading propositions guiding the study. Therefore, most answers result to be

inevitably biased and filtered by the students' perception of their experience in the Apple Developer or Digita Academies, respectively.

However, this survey can provide a useful reference for further investigation aiming at analysing specific topics or knowledge transfer processes. Nonetheless, it could help monitoring the evolution of the perception of academy students, following the evolutions and enhancements produced on the San Giovanni Hub itself.

As an example, the claim of the role of space (defined as “Ba”) as knowledge driver is adopted expressively in the Apple Developer Academy (with the 4 dimensions of the Challenge Based Learning).

4.4. Discussion in the framework provided by the literature review

Linkages among actors vary according to the purposes and projects to be implemented within the system (or ecosystem). The most important thing is the existence of a linkage, i.e. a relationship built on a plan tailored on the systems of actors interested in the Hub. For, the ability to attract investments and create value in term of economic returns depends on the existence and strength of said linkages. First, it is necessary to leverage on elements of differentiation, subsequently a linkage can be envisaged or added, since the implementation of new projects must consider a thorough knowledge of such linkages. More specifically, the process should:

- i. detect what every single STKH is able to bring in terms of diversification for the benefit of the system, for instance distinctive elements on the international level;

ii. understand the best way to combine such elements (in this phase one ought to pay attention on the competitors within the system).

“An effective example is provided by the settlement of Cisco in Naples that has engendered linkage on the educational level for the first time” (Ent-09).

“In a win/win logic the gaps among academia, industry and civil society can be filled through third mission (or CSR) logics”.(Ent-09).

The table below summarises a mapping proposal that can be adopted by the SGH Governance in order to understand which subjects can be involved in the system.

Table 4.4: Suggestion for a mapping tool to be used by the SGH Governance to choose which stakeholder to be involved

Linkage	Distinctive Features <i>(to be adapted to the local context)</i>	Potential Stakeholder
Education		
Research		
Entrepreneurship		

Society		

4.5. Conclusion

The most relevant findings of the study have contributed to add qualitative features and items to the analysis of value creation process occurring in the Hub and addressed to its stakeholders.

The investigation on the role of the “Federico II” University Hub in the peripheral/deprived urban area of San Giovanni a Teduccio has provided a first level understanding of:

- i.* the nature of the Hub in terms of innovation, knowledge and technology transfer, and third mission;
- ii.* the innovation strategy implemented or planned by the university governance and local government institutions according to the “Civic university” purposes; and
- iii.* the relevance of proximity (geographical, relational, cultural) to the research centre for entrepreneurial organisations directly or indirectly interacting with the Hub.

Our work has sought to provide sound arguments supporting the research question concerning *the main patterns and characteristics of the SGH in terms of third mission, innovation, knowledge transfer and University engagement.*

Such attempt has been pursued by developing the main propositions of the study.

With regard to P1, *The San Giovanni Hub can be considered both a social and a business mission in nature*, outcomes of both the thematic analysis and of the performed surveys have highlighted the twofold nature of the SGH.

The second proposition *P.2. The role of innovation process, technology transfer mechanisms and third mission objectives are able to make the SGH a unique experience in terms of university engagement*, is supported by most of the themes emerged from the stakeholders interviews analysed through a template analysis, as it is the case for *P.3. The selected case represents both a research and entrepreneurial knowledge intensive environment*.

Finally, *P.4. The chosen context is able to engender and enhance value creation in terms of innovation performance and knowledge transfer challenges activities for the interacting subjects, entities and organisations which are not necessarily physically located in the same area* is grounded in the whole empirical analysis, from observation to document review, and from the thematic analysis on the semi-structured interviews to surveys.

One of the practical implications resides in the possibility to evaluation “soft” characteristics related to innovation and knowledge transfer, which are not easily measurable in qualitative terms solely. Indeed, such features represent the factors facilitating innovation and knowledge transfer processes.

The outcomes of the analysis can be used as a valuable tool for both University governance and managers of local urban institutions to promote or enhance knowledge transfer mechanism and both entrepreneurial and social innovation activities in the selected area.

The study has shown that innovation and knowledge transfer in a knowledge intensive site located in a peripheral urban area do have specific patterns and can generate value creation and development within and outside its very borders.

As Lisa Jackson, Apple Vice President of Environment, Policy and Social Initiatives and part of Apple's executive leadership has recently stated in her recent visit to Naples' Academy: "Naples is ready for the next big thing" (*L'Economia, Corriere del Mezzogiorno*, 11.06.2018).

4.6. Limits of the work and challenges involved: framing an innovation performance evaluation tool

The analysis only considers the interactions of the Hub with its main stakeholders from an internal perspective, focusing on its innovation level and potential in terms of value creation. Nevertheless, a specific investigation on the implications for a wider range of actors and territorial patterns should enrich the study. Further elements can be included and further patterns can be examined, i.e. engaging in a broader longitudinal study and implementing a multiple case study evaluation. In fact, a benchmark analysis on the basis of a variety of case studies could be performed in subsequent inquiries drawing from the findings of this work in which the main features of the SGH have been identified that characterise it as a unique case.

Further variables and KPIs could be added to build an evaluation tool and subsequently enrich the scoring process. Thus, quantitative data can be gathered from the periodical testing of the innovation and technology transfer performance of the Hub.

Accordingly, further research should focus on the testing and the eventual adjusting of the evaluation tool for which the present study has provided initial clues. The evolution of the systems of innovation towards a social-oriented perspective has led to re-consider the role of institutions in the process of creating and sharing value through knowledge to enhance a more effective connection and interaction between people and technology.

For the sake of our work it was necessary to also involve the main features of the social innovation and third mission services provided by the knowledge intensive university Hub under investigation. The outcomes of such a complex observation should eventually lead to identify a set of indicators able to express the value created by the Hub in terms of engagement and social innovation.

The empirical analysis described in Chapter III has provided an insight in the innovation and knowledge transfer mechanisms engendered by the Hub.

Our research has opened the path towards a wide range of further investigations involving a rigorous detection of KPIs to be selected among the main themes emerged from the empirical analysis, to include them in a measurement tool. Such instrument would evaluate the intangible patterns contributing to the performance of the Hub in terms of knowledge and technology transfer impacts and potentials for the surrounding area in which it is embedded. Thanks to the performance indicators spotted in the framework of knowledge transfer, university engagement and social innovation conceptualisations, the tool would evaluate the intangible patterns contributing to the performance of the Hub in terms of knowledge and technology transfer impacts and potentials for the surrounding area in which it is embedded.

Further variables and KPI could be added to the evaluation tools, to enrich the scoring process. Thus, quantitative data can be gathered from the periodical testing of the innovation and technology transfer performance of the Hub. A proposed template for the evaluation tool is reported in table 4.5 below.

Table 4.5: Evaluation tool proposal for the periodic assessment of the SGH intangible patterns enhancing innovation and technology transfer practices

Main Actors involved	1. Knowledge					
	KPIs			# to date _____	Target in 12 months	
Main Actors involved	2. Third Mission					
	KPIs			#to date _____	Target in 12 months	

Hence, starting from the propositions developed by the present research, deeper insights can lead to more general assumptions, notwithstanding the specific scientific hub taken into account.

Several additional research questions could be addressed envisaging future research perspectives, some of which can be posed as follows:

r.q.1. Why and how do innovation trends develop in a peripheral area hosting a knowledge intensive hub?

r.q.2. In which ways proximity to a university research centre can prompt innovation mechanisms for urban area in which it is embedded?

r.q.3. How can the potential and level of innovation and knowledge transfer of a research centre be measured according to qualitative performance indicators?

Thus, what is to be accomplished is much wider than what has been already done in this work.

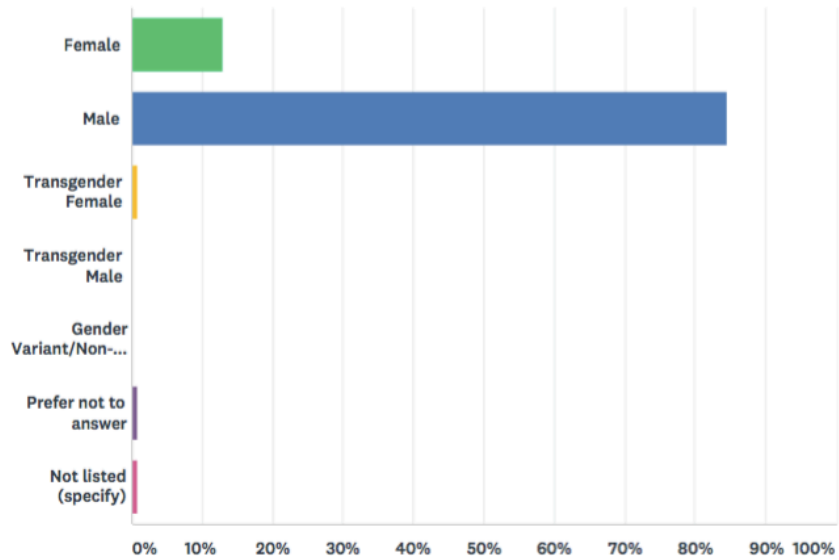
APPENDIX 1

Apple Academy Survey

Academic year 2017/2018

Q1. To which gender identity do you most identify?

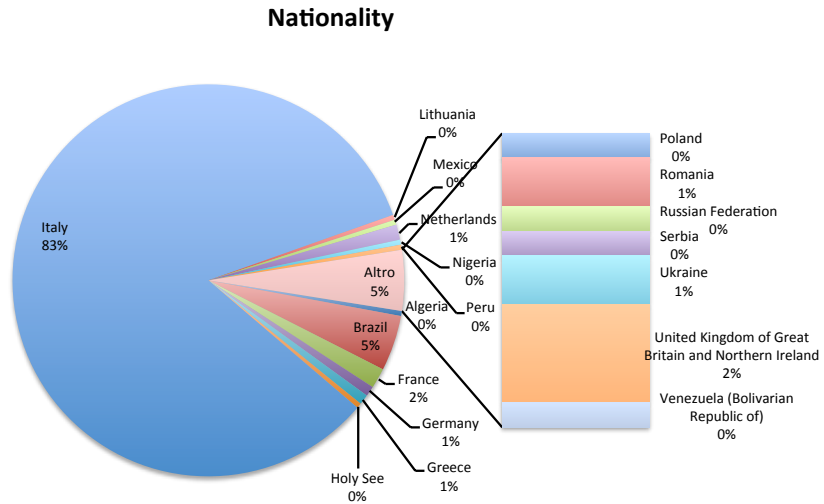
Answered: 240 Skipped: 0



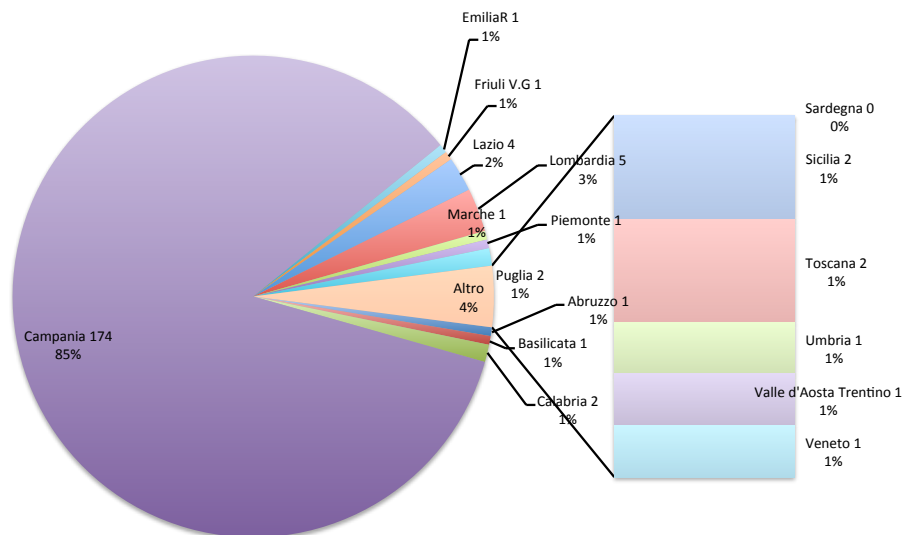
Q2. In what year were you born?

Respondents' Birth Date	%	Frequency
1995	13,8%	33
1996	12,1%	29
1993	9,6%	23
1994	9,2%	22
1992	8,3%	20
1997	7,9%	19
1989	6,7%	16
1991	6,7%	16
1990	5,0%	12
1988	4,2%	10
1986	2,9%	7
1998	2,5%	6
1983	1,7%	4
1987	1,7%	4
1980	1,3%	3
1982	1,3%	3
1984	1,3%	3
1972	0,8%	2
1981	0,8%	2
1967	0,4%	1
1968	0,4%	1
1970	0,4%	1
1971	0,4%	1
1976	0,4%	1
1979	0,4%	1

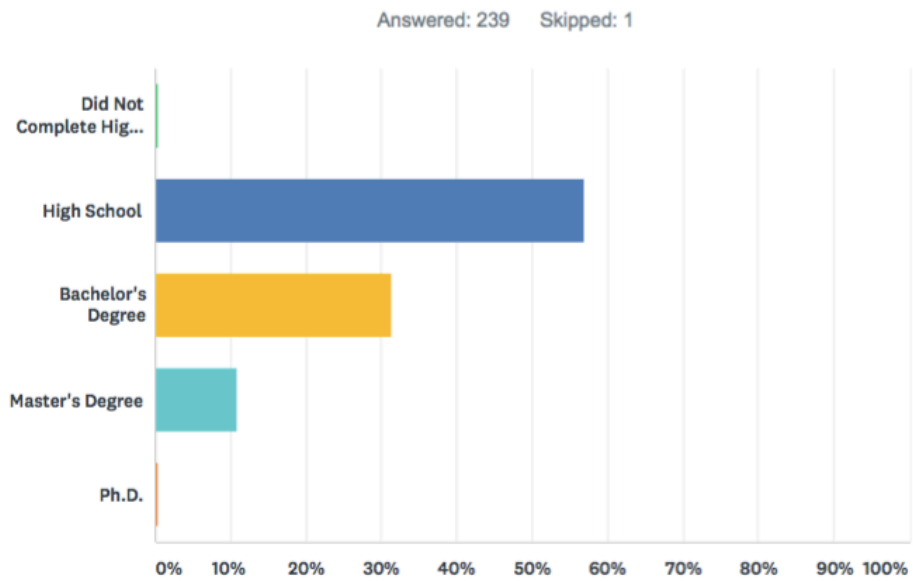
Q3. Nationality of origin:



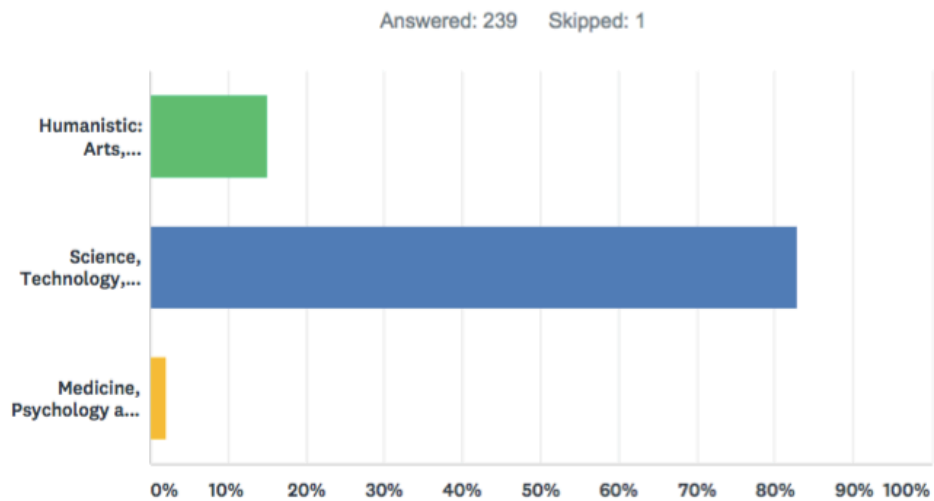
Q4. If Italian, please indicate the region you come from



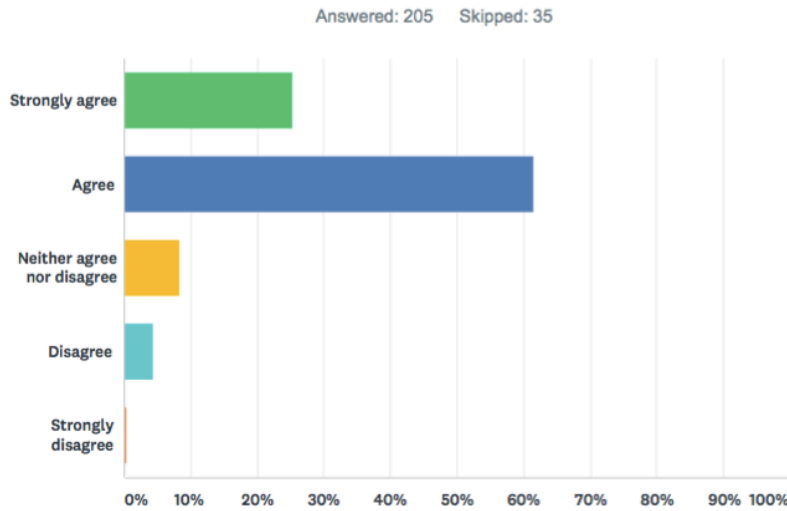
Q5. Educational Degree



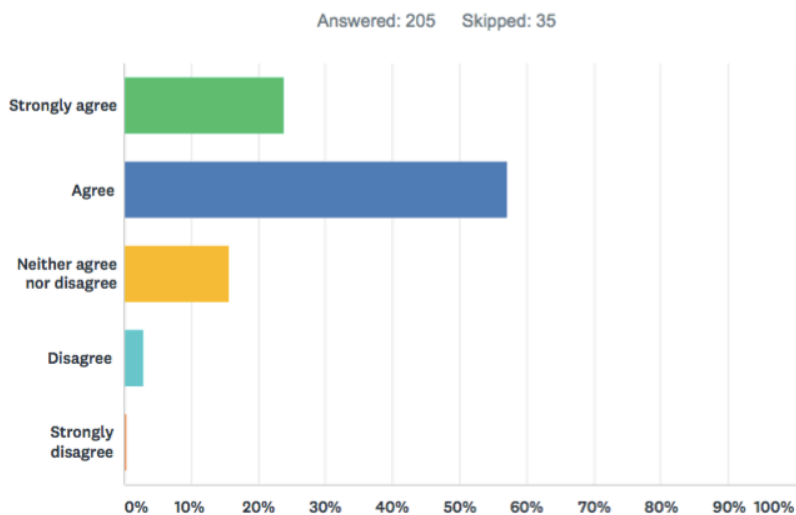
Q6. What is your big area of study in university?



Q8. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is *generated*?

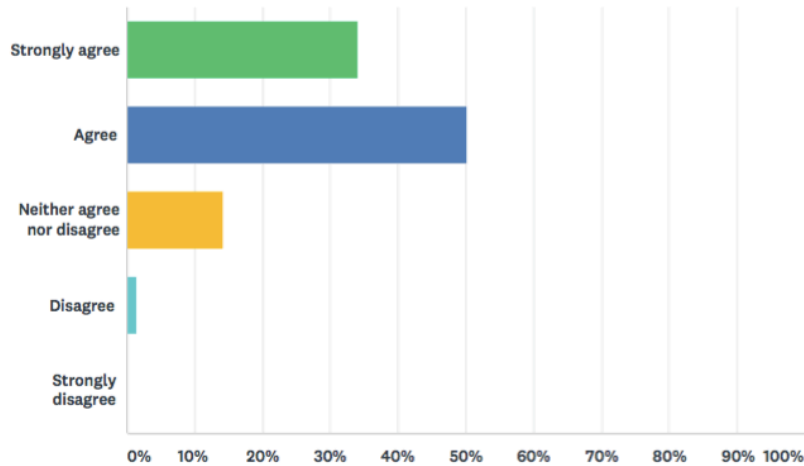


Q9. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is *concentrated*?



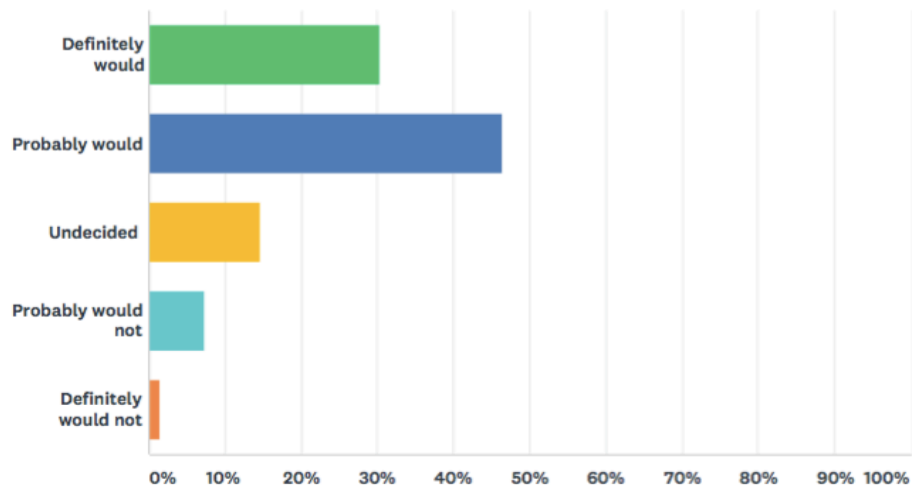
Q10. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is shared within and beyond its physical borders”?

Answered: 205 Skipped: 35

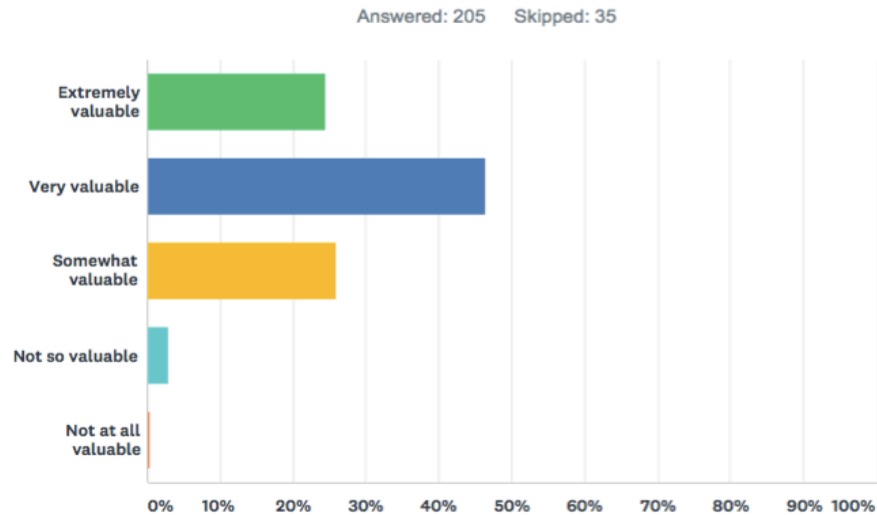


Q11. According to the following definition of Stakeholder: “any group or individual who can affect or is affected by the achievement of the organization's objectives” (Freeman, R.E., 1984: 46), would you consider the students of the Apple Academy as stakeholders of the San Giovanni Hub?

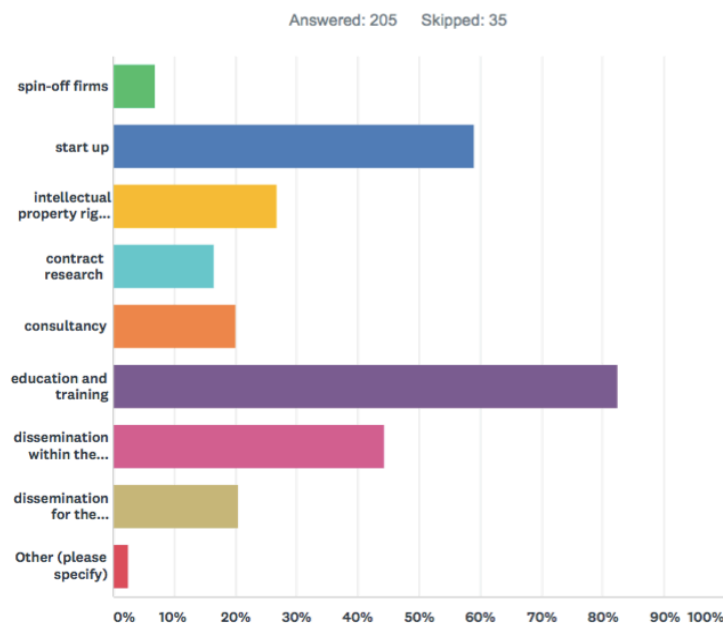
Answered: 205 Skipped: 35



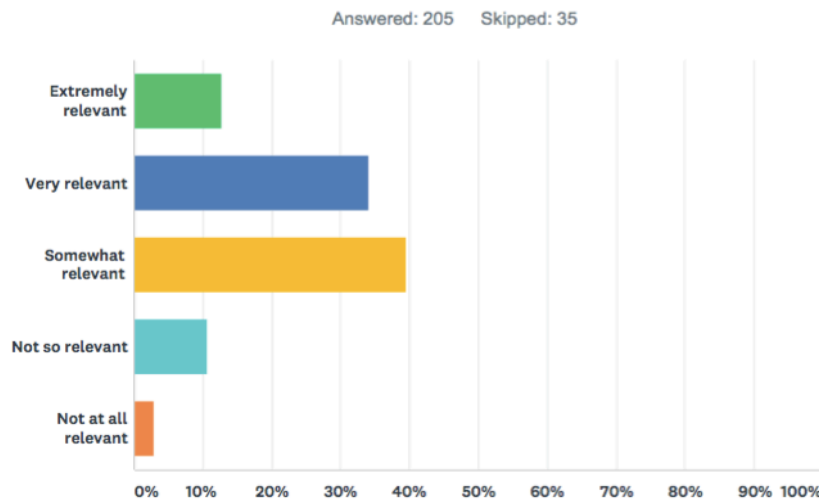
Q12. How would you rate the social impact of the San Giovanni Hub in terms of “activities concerned with the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments” (Molas- Gallart et al, 2002)?



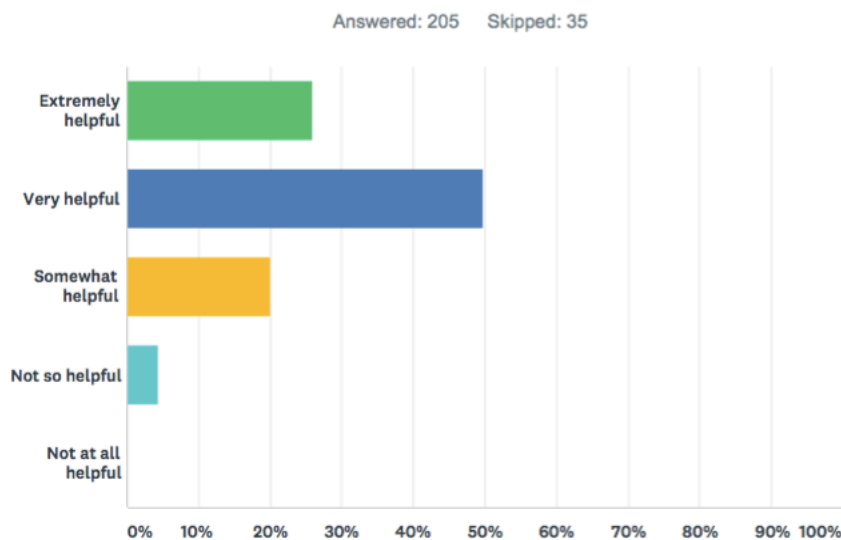
Q13. Among the following items and according to your opinion, please select one or more results implemented by the Hub in terms of social impact:



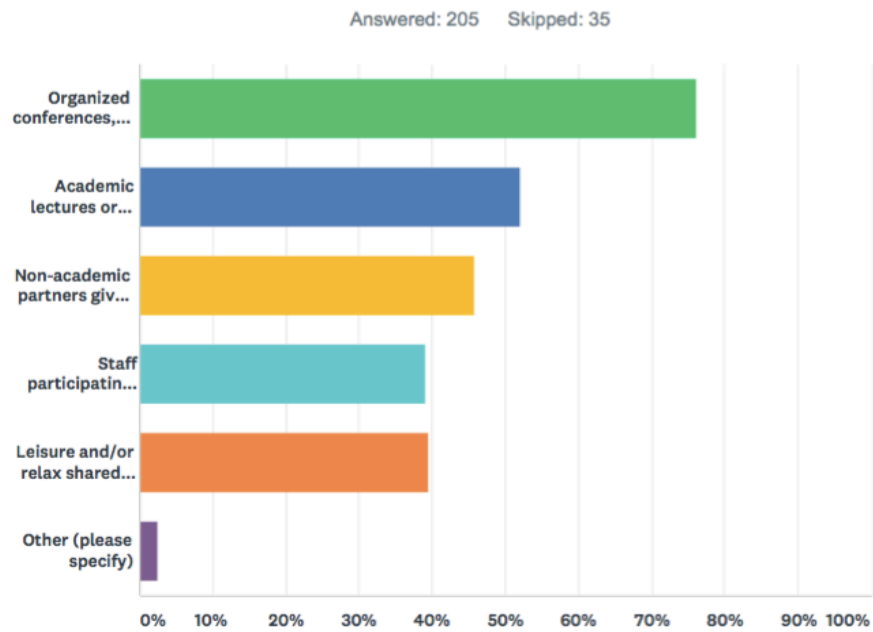
Q14. According to the concept of Proximity, defined as geographic, relational and cultural closeness internal to the San Giovanni Hub and external within the territory in which the San Giovanni Hub is embedded, how would you rate the relevance of proximity to San Giovanni Hub for the activities and the stakeholders interacting with it?



Q15. How much do you think that physical space in San Giovanni Hub is helpful to improve the transfer of knowledge - i.e. conveying notions, facts and skills from an individual or group of people to other individuals or groups of people-?



Q16. Among the following items, please select one or more relevant ways in which physical space in San Giovanni Hub can be exploited

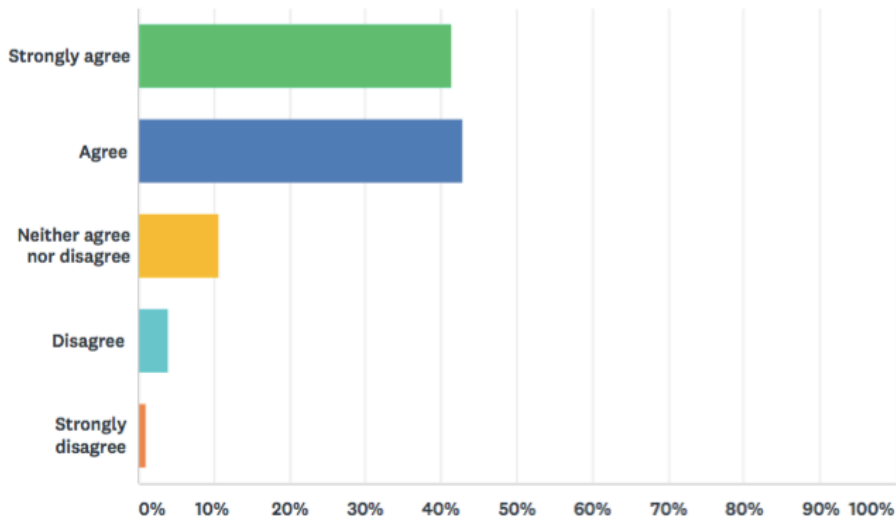


Q16.

#	OTHER (PLEASE SPECIFY)	DATE
1	as already it is done, workshop of various company , presentations etc. Some times, job meeting should be organised. Sometimes we can invite people of scientific world not necessarily correlated with software development, like researcher, mathematics, physicist, musicians, etc...	6/18/2018 9:51 AM
2	Cross-specialty events, eg Conservatory orchestra + local organization = how to organize a concert	6/14/2018 3:25 PM
3	sports gym fitnesses	6/14/2018 3:05 PM
4	transfer university engineering departments	6/14/2018 1:57 PM
5	K	6/14/2018 1:14 PM

Q17. How much do you agree about the capability of the Apple Academy to improve students' Knowledge?

Answered: 205 Skipped: 35



Q18. Please, feel free to add further remarks on one or more of the issues dealt with in the present survey

Answered: 21 Skipped: 219

- R. 14: Bureaucracy is killing southern countries (including mine: France). If Italy starts fighting back, what better place than San Giovanni? Not like me "spitting in the soup", but many, many issues could have been avoided with proper organisation — including students if staff is missing! Yet I MUST finish on a positive note: it's been a privilege to be here, in the result of politicians doing their job (for once, there, I said it) and giving an interesting mix of people opportunities in a place where they're sadly needed. I hope we all helped change San Giovanni a bit. I hope news of Apple Academy give perspective to the youngster who tried to steal my computer the day before Academy started. My place is probably more comfortable than his, but it doesn't have to be that way.*
- R. 15: Please, consider asking about networking generated inside of the Academy between colleagues what for me at least is really important. If I have project to do I will consider inviting colleagues from here to work together after the Academy.*

APPENDIX 2

DIGITA Academy Survey

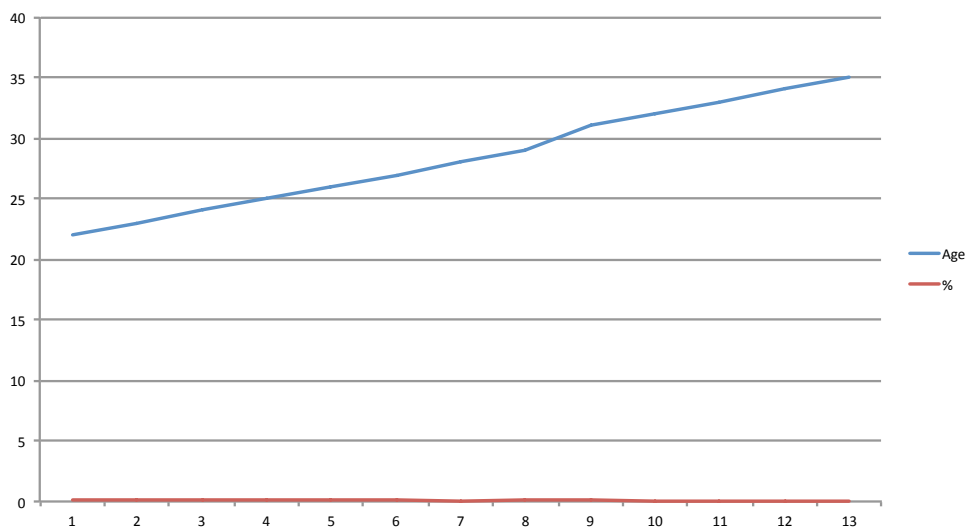
Academic year 2017/2018

Personal data: Age & Gender

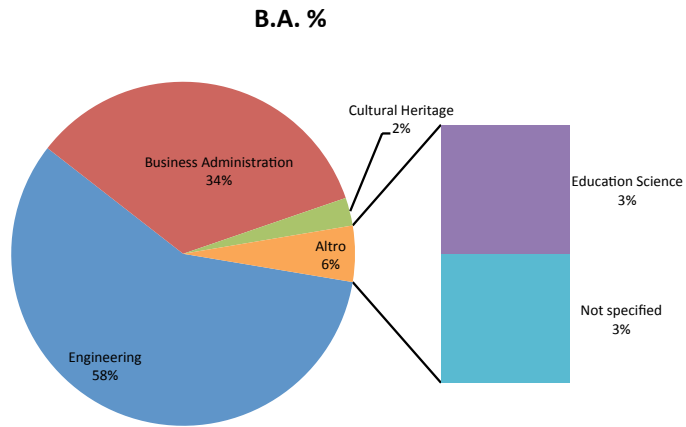
Age	%	tot
22	8%	3
23	5%	2
24	18%	7
25	21%	8
26	8%	3
27	13%	5
28	3%	1
29	5%	2
31	5%	2
32	3%	1
33	3%	1
34	3%	1
35	3%	1

Gender	%	tot
F	45%	17
M	55%	21

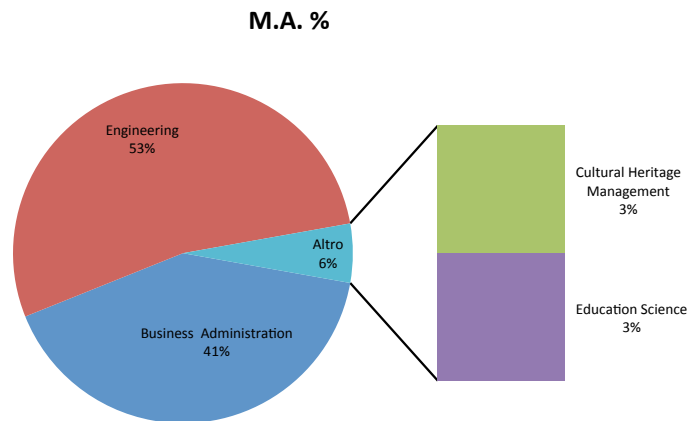
Personal data: Age & Gender



Education Data: Bachelor's Degree



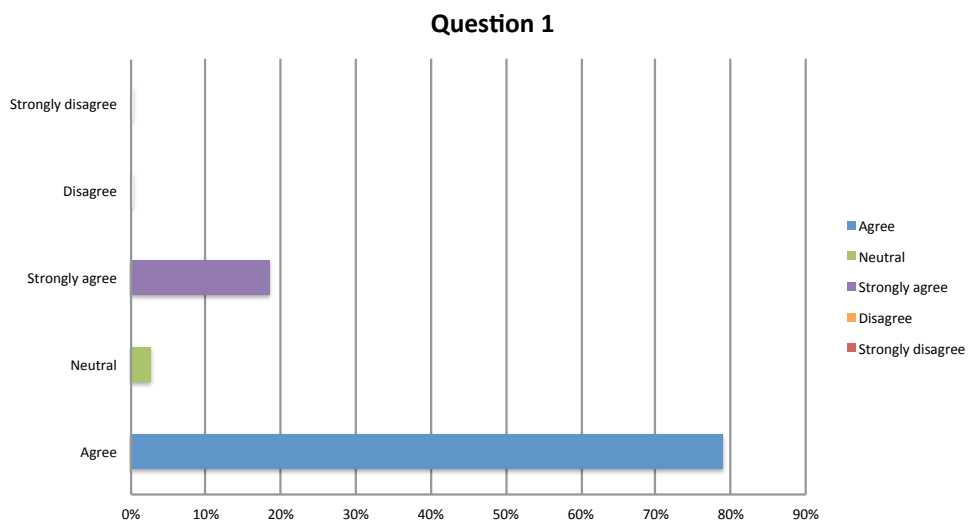
Education Data: Master's Degree



Q1. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is *generated*?

Question 1	
Answer	%
Agree	79%
Neutral	3%
Strongly agree	18%
Disagree	0%
Strongly disagree	0%

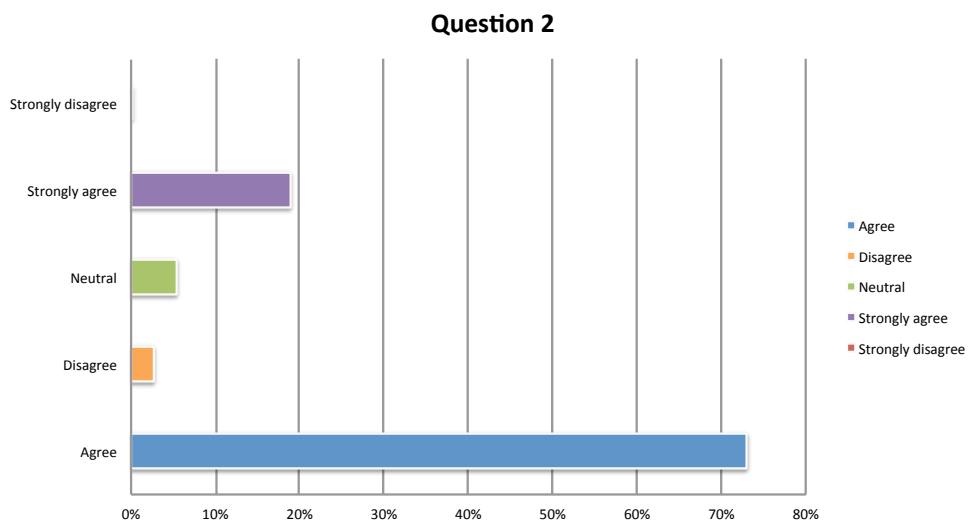
Q1



Q2. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is concentrated?

Question 2	
Answer	%
Agree	73%
Disagree	3%
Neutral	5%
Strongly agree	19%
Strongly disagree	0%

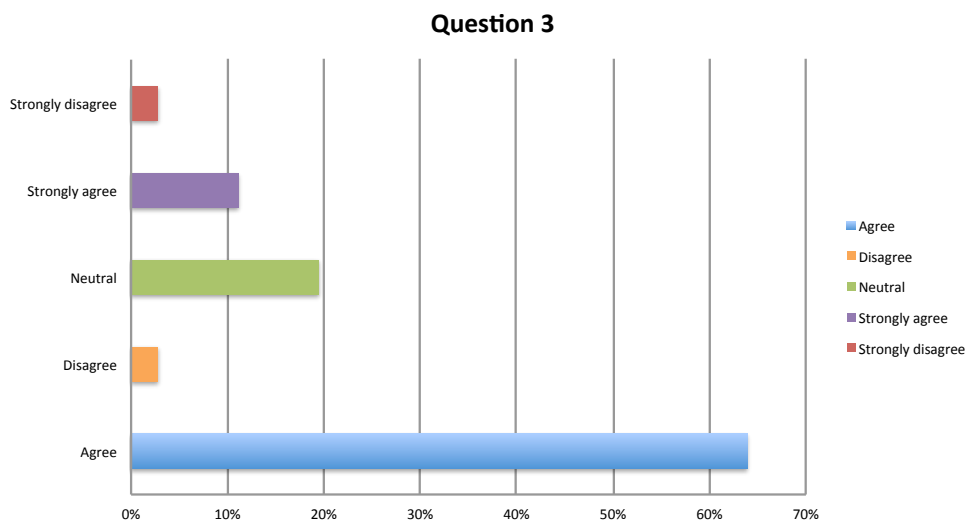
Q2



Q3. According to the concept of Knowledge defined as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (The Oxford Dictionary), do you agree with the fact that the San Giovanni Hub is a place where knowledge is shared within and beyond its physical borders”?

Question 3	
Answer	%
Agree	64%
Disagree	3%
Neutral	19%
Strongly agree	11%
Strongly disagree	3%

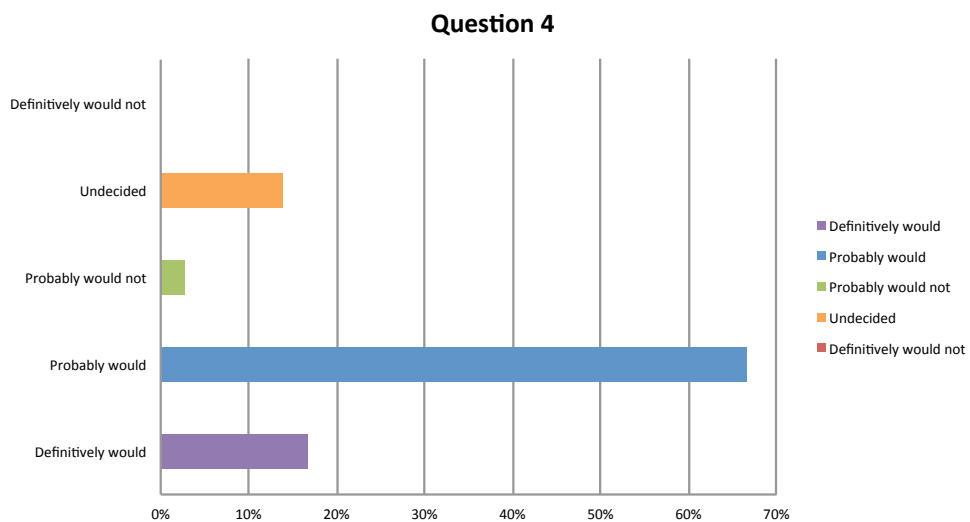
Q3



Q4. According to the following definition of Stakeholder: “any group or individual who can affect or is affected by the achievement of the organization's objectives” (Freeman, R.E., 1984: 46), would you consider the students of the Digita Academy as stakeholders of the San Giovanni Hub?

Question 4	
Answer	%
Definitively would	17%
Probably would	67%
Probably would not	3%
Undecided	14%
Definitively would not	0%

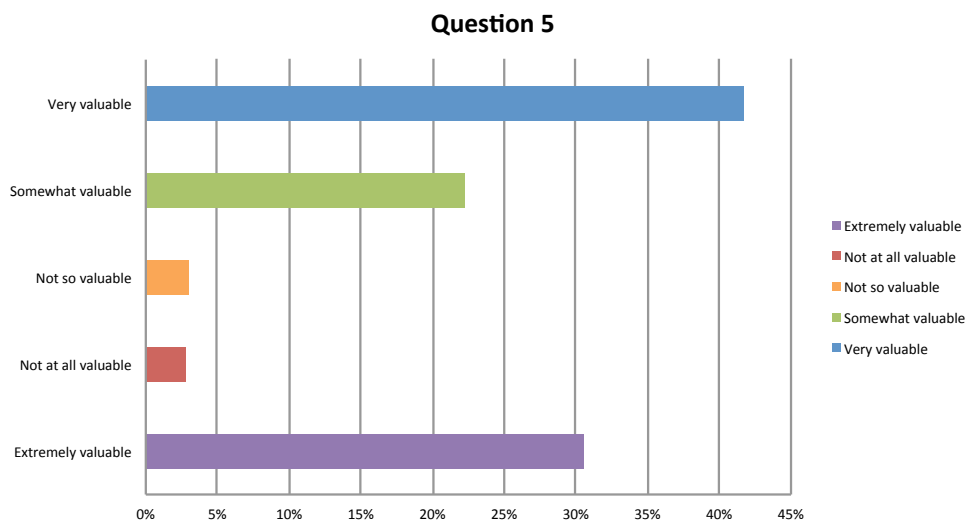
Q4



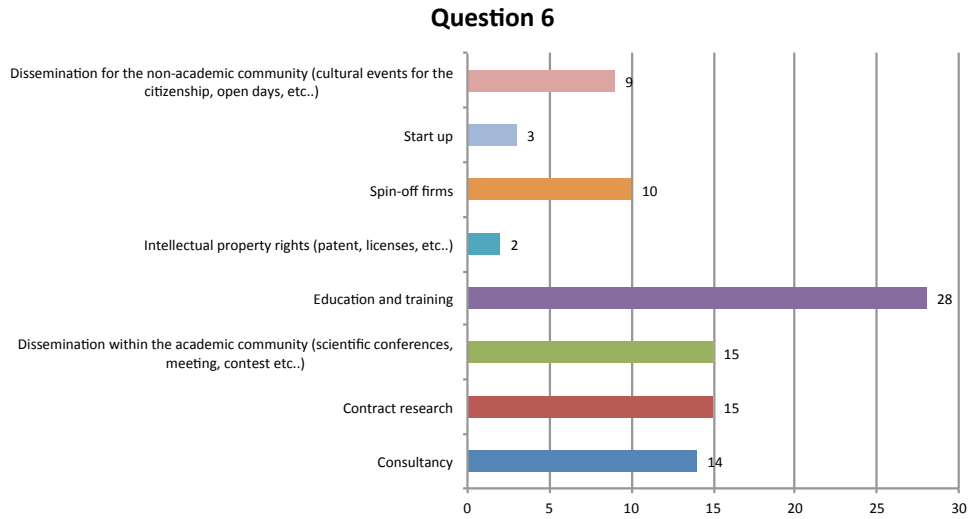
Q5. How would you rate the social impact of the San Giovanni Hub in terms of “activities concerned with the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments” (Molas- Gallart et al, 2002)?

Question 5	
Answer	%
Extremely valuable	31%
Not at all valuable	3%
Not so valuable	3%
Somewhat valuable	22%
Very valuable	42%

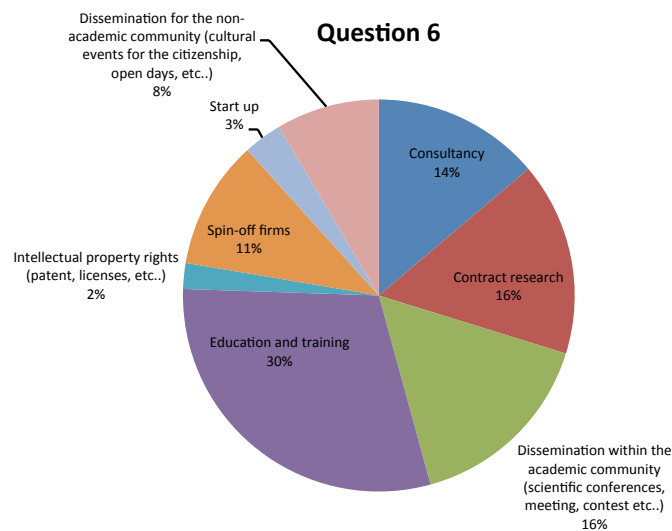
Q5



Q6. Among the following items and according to your opinion, please select one or more results implemented by the Hub in terms of social impact:



Q6



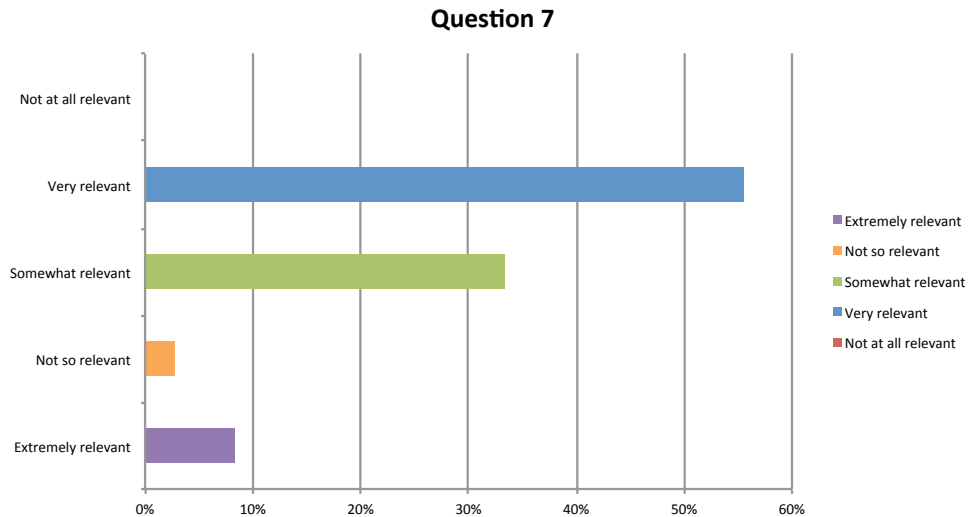
Q7. According to the concept of Proximity, defined as geographic, relational and cultural closeness internal to the San Giovanni Hub and external within the territory in which the San Giovanni Hub is embedded, how would you rate the relevance of proximity to San Giovanni Hub for the activities and the stakeholders interacting with it?

Question 6	
Answer	%
Extremely relevant	8%
Not so relevant	3%
Somewhat relevant	33%
Very relevant	56%
Not at all relevant	0%

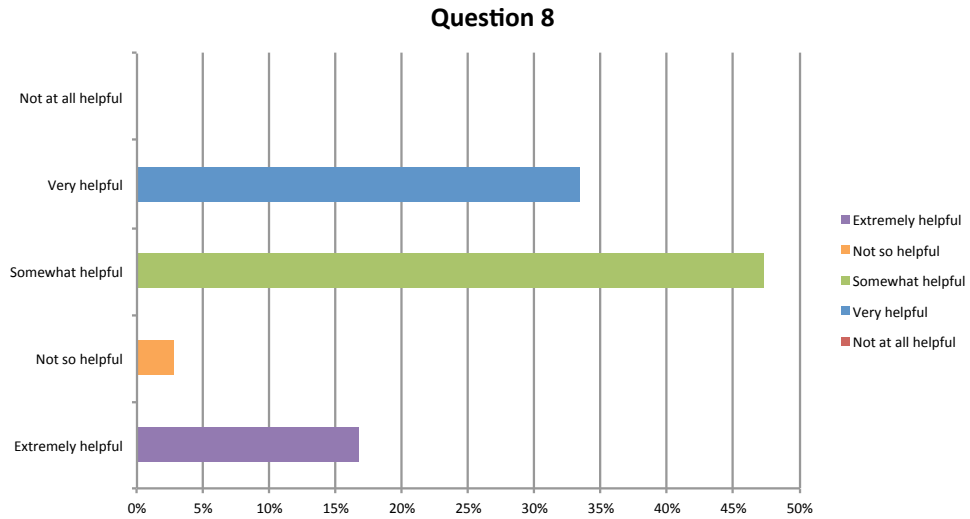
Q8. How much do you think that physical space in San Giovanni Hub is helpful to improve the transfer of knowledge - i.e. conveying notions, facts and skills from an individual or group of people to other individuals or groups of people-?

Question 8	
Answer	%
Extremely helpful	17%
Not so helpful	3%
Somewhat helpful	47%
Very helpful	33%
Not at all helpful	0%

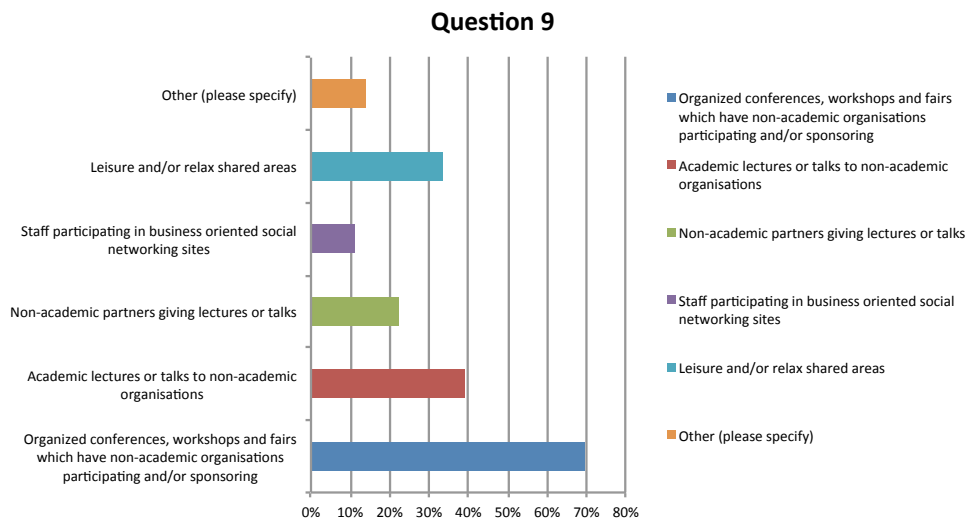
Q7. According to the concept of Proximity, defined as geographic, relational and cultural closeness internal to the San Giovanni Hub and external within the territory in which the San Giovanni Hub is embedded, how would you rate the relevance of proximity to San Giovanni Hub for the activities and the stakeholders interacting with it?



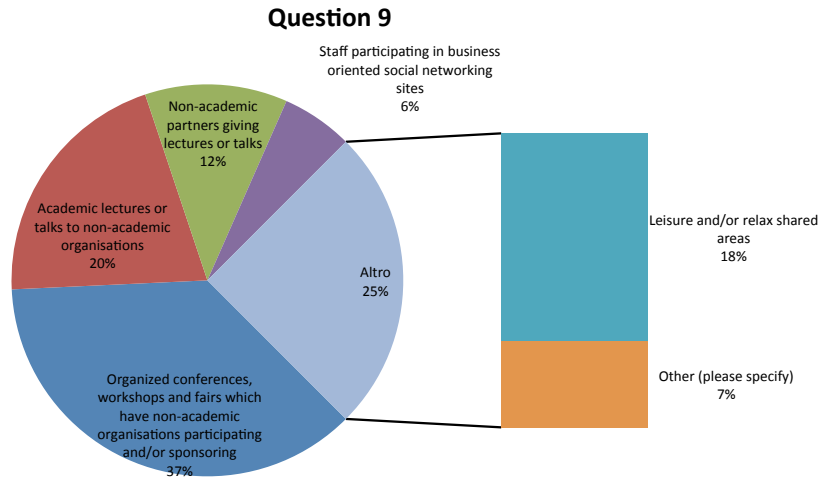
Q8



Q9. Among the following items, please select one or more relevant ways in which physical space in San Giovanni Hub can be exploited:



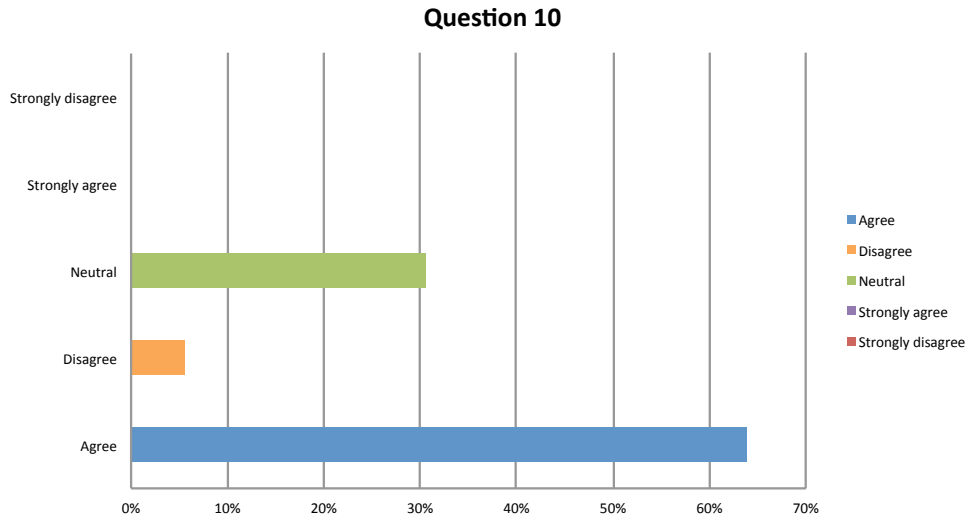
Q9



Q10. How much do you agree about the capability of the DIGITA Academy to improve students' Knowledge?

Question 10	
Answer	%
Agree	64%
Disagree	6%
Neutral	31%
Strongly agree	0%
Strongly disagree	0%

Q10



Q11. Please, feel free to add further remarks on one or more of the issues dealt with in the present survey

Question 11	
Answer	%
Bar or Buffet menu needed in the SGH	20%
Cafeteria needed	60%
none	20%

REFERENCES

- Acs, Z. J. (2002). *Innovation and the growth of cities*. Edward Elgar.
- Acs, Z. J. & Szerb, L. (2010). The Global Entrepreneurship Index (GEINDEX) (June 15, 2010). *Foundations and Trends in Entrepreneurship*, 5: 5, 341-435.
- Acs, Z. J., Autio, E. and Szerb, L. (2014). National Systems of Entrepreneurship: Measurement issues and policy implications. *Research Policy*, vol. 43, issue 3, 476-494.
- Addie, J-P. D., Angrisani, M. and De Falco, S. (2018), "University-led innovation in and for peripheral urban areas: new approaches in Naples, Italy and Newark, NJ, US". *European Planning Studies*, 26: 6, 1181-1201.
- Arnkil, R. Järvensivu, A., Koski, P. & Piirainen, T. (2010). Exploring Quadruple Helix: Outlining User Orientated Innovation Models, Työraportteja 85/2010 Working Papers.
- Asheim, B. T. & Isaken, A. (2002). Regional Innovation Systems: The Integration of Local 'Sticky' and Global 'Ubiquitous' Knowledge. *The Journal of Technology Transfer* 27: 1, 77–86.
- Asheim, B., Lawton Smith, H., & Oughton, C. (2011). Regional innovation systems: Theory, empirics and policy. *Regional Studies*, 45(7), 875–891.
- Asheim, B.T. & Gertler, M. S. (2006) *The Geography of Innovation: Regional Innovation Systems*
- Audretsch D. B., Keilbach M. (2007). The theory of knowledge spillover Entrepreneurship, *Journal of Management Studies*, 44(7), 1242-1254.
- Audretsch D.B., Belitski, M. and Desai, S. (2015). Entrepreneurship and economic development in cities. *The Annals of Regional Science*, 55: 1, 33-60.
- Audretsch, D. B. (2014). From the entrepreneurial university to the university for the entrepreneurial society. *Journal of Technology Transfer*, 39(3), 313-321.
- Autio, E., Kenney, M., Mustar, P., Siegel, D. & Wright, M. (2014). Entrepreneurial innovation: The importance of context. *Research Policy*, 2014, 43: 7, 1097-1108.
- Aydalot, P. (ed.) (1986). *Milieux Innovateur en Europe*. Paris: Groupe de Recherche Européen sur les Milieux Innovateurs (GREMI).

B.E.P.A. (2010). Empowering People, Driving Change: Social Innovation in the European Union. Report Prepared for the Bureau of European Policy Advisors for the European Commission, Luxembourg, CEC

Baxter, P., Jack, S. (2008) Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers, *The Qualitative Report*, 13(4), pp. 544-559. Retrieved from <http://nsuworks.nova.edu/tqr/vol13/iss4/2>.

Benneworth, P., & Hospers, G. (2007). The new economic geography of old industrial regions: Universities as global/local pipelines. *Environment and Planning C*, 25(6), 779–802.

Bercovitz, J., Feldmann, M. (2006). "Entrepreneurial Universities and Technology Transfer: A Conceptual Framework for Understanding Knowledge-Based Economic Development" *Journal of Technology Transfer*, 31: 175–188, 2006.

Berggren, E., & Dahlstrand, A. L. (2009). Creating an entrepreneurial region: Two waves of academic spin-offs from Halmstad University. *European Planning Studies*, 17(8), 1171–1189.

Borrás, S. & Edquist, C. (2013). The choice of innovation policy instruments. *Technological Forecasting & Social Change* 80 (2013), 1513–1522.

Boschma, R. (2005). Proximity and innovation: a critical assessment. *Regional Studies*, 39, 61–74.

Bosma, N. & Sternberg, R. (2014). Entrepreneurship as an Urban Event? Empirical Evidence from European Cities. *Regional Studies*, 48: 6, 1016-1033

Boyatzis, R. E. (1998). *Transforming qualitative information: thematic analysis and code development*. Sage.

Brännback, M. (2003) R&D collaboration: role of Ba in knowledge-creating networks. *Knowledge Management Research & Practice*, vol. 1, pp. 28-38.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology, *Qualitative Research in Psychology*, 3:2, 77-101.

Breschi, S. & Malerba, F. (1997). Sectoral innovation systems: technological regimes, Schumpeterian dynamics, and spatial boundaries, in Edquist, C. (1997). "Systems of innovation: Technologies, institutions and organisations". Routledge: London and New York, 130-156.

Bryman A. & Bell E. (2011). *Business Research Methods*. Oxford: Oxford University Press.

Bryman A., & Burgess, R.G. (1994). *Analyzing Qualitative Data*. London: Routledge.

Calhoun, C. (2006). The University and the Public Good. *Thesis Eleven*, 84(1), 7-43.

Capello, R. (2009). Spatial spillovers and regional growth: a cognitive approach. *European Planning Studies*, 17, 639–658.

Caragliu, A. & Nijkamp P. (2015), Space and knowledge spillovers in European regions: the impact of different forms of proximity on spatial knowledge diffusion. *Journal of Economic Geography*, 1–26.

Caragliu, A. & Nijkamp, P. (2012). The impact of regional absorptive capacity on spatial knowledge spillovers. *Applied Economics*, 44, 1363–1374.

Carayannis, E.G. & Campbell D.F.J. (2014). Developed democracies versus emerging autocracies: arts, democracy, and innovation in Quadruple Helix innovation systems, *Journal of Innovation and Entrepreneurship*, 3-12.

Casey, E. S. (1997). *The Fate of Place: A Philosophical History*. Berkeley, CA: University of California Press.

Charles, D. (2006). Universities as key knowledge infrastructures in regional innovation systems. *Innovation: The European Journal of Social Science Research*, 19(1), 117–130.

Chesbrough, H. (2006) Open Innovation: A New Paradigm for Understanding Industrial Innovation. in “Open innovation: Researching a New Paradigm” Chesbrough, H., Vanhaverbeke, W., West, J. (Eds.). Oxford University Press. Oxford, pp. 373.

Cohen, W.M, Levinthal D.A. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation, in *Administrative Science Quarterly*, 35(1), Special Issue: Technology, Organizations, and Innovation, pp. 128-152.

Cooke, P. (2001). Regional innovation systems, clusters, and the knowledge economy. *Ind Corp Change*, 10:4, 945–74.

Cooke, P., Uranga, M. G. & Etxebarria, G. (1997). Regional innovation systems: Institutional and organisational dimensions. *Research Policy*, 26 (4–5), 475-491.

Corbetta, P. (2003). *La Ricerca sociale: metodologie e tecniche. Vol. III. Le Tecniche qualitative*. Bologna: Il Mulino.

Creswell, J. (1998). *Research design: Qualitative, quantitative, and mixed methods approaches*, (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. (2007). Data analysis and representation. In J. Creswell (Ed.), *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed., 179–212). Thousand Oaks, CA: Sage.

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. London: Sage.

De Falco, S., Polese, F., & Angrisani, M. (2015). Innovation and entrepreneurship in smart cities: A S-D Logic's application to the role of research centres in deprived urban areas. In R. P. Dameri & L. Beltrametti (Eds.), *ECIE 2015: Proceeding of the 10th European conference on innovation and entrepreneurship*. Genoa: ACPI, (157–164).

Dell'Anno, D. & Del Giudice, M. (2015). Absorptive and desorptive capacity of actors within university-industry relations: does technology transfer matter?, *Journal of Innovation and Entrepreneurship*, 4:13, (1-20).

Doloreux, D. (2003). Regional innovation systems in the periphery: the case of the Beauce in Que'bec (Canada). *Int J Innovation Manage*, 7: 1, 67-94.

Doloreux, D., & Parto, S. (2005). Regional innovation systems: Current discourse and unresolved issues. *Technology in Society*, 27(2), 133-153.

Dosi, G. (1988). The nature of innovation process, in: Dosi, G., Freeman, C.R., Nelson, R.R., Soete, L. (1988), "Technical change and economic theory", Burns & Oates: London.

Eckhardt J.T. & Shane S.A. (2003). Opportunities and Entrepreneurship, *Journal of Management*, 29(3), 333-349.

Edquist, C. (1997). "Systems of innovation: Technologies, institutions and organisations". Routledge: London and New York.

Edquist, C. (2005) Systems of innovation: perspectives and challenges. in: J. Fagerberg, D. Mowery & R. Nelson (Eds.), *Handbook of Innovation*, Oxford: Oxford University Press: (Oxford) 2005, ch 7, pp. 182-206.

Edquist, C. & Johnson, B. (1997) Institutions and Organizations in Systems of Innovation, in *Systems of innovation: Technologies, institutions and organisations*. Routledge: London and New York, 41-63.

Edquist, C., Hommen, L., & McKelvey, M. (2001). *Innovation and Employment: Process versus Product Innovation*. UK: Edward Elgar Publishing, Cheltenham.

Etzkowitz, H. (2008). *The triple helix: University-industry-government*. New York: Routledge.

Etzkowitz, H. & Klofsten, M. (2005). The innovating region: toward a theory of knowledge-based regional development, *R&D Management*, Vol. 35 No. 3, pp. 243-255.

Etzkowitz, H., (2002), Incubation of Incubators: Innovation as a Triple Helix of University–Industry–Government Networks, *Science and Public Policy* 29 (2), 115-128.

Etzkowitz, H., & L. Leydesdorff, (1997), Introduction: Universities in the Global Knowledge Economy, in H. Etzkowitz and L. Leydesdorff (eds.), *Universities and the Global Knowledge Economy: a Triple Helix of University–Industry–Government Relations*, London and Washington: Pinter, 1-8.

Etzkowitz, H., & L. Leydesdorff, (1999). The Future Location of Research and Technology Transfer, *Journal of Technology Transfer* 24, 111-123.

Etzkowitz, H., Ranga, M., Benner, M., Guarany, L., Maculan, A.M. & Kneller, R. (2008) "Pathways to the entrepreneurial university: towards a global convergence" *Science and Public Policy*, 35(9), November 2008, pages 681-695.

Etzkowitz, H., Webster, A., Gebhardt, C., Cantisano Terra, B. R. (2000). The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm, *Research Policy* (29), 313-330.

Fagerberg, J. (2017). Innovation Policy: Rationales, Lessons and Challenges. *Journal of Economic Surveys*, 31 (2), 497–512.

Fagerberg, J. & Mowery, D. C. (2004), *The Oxford Handbook of Innovation*, Oxford University Press: Oxford.

Fagerberg, J., Fosaas, M. & Sapprasert, K. (2012). Innovation: Exploring the knowledge base, *Research Policy* (41), 1132-1153.

Feldman, M. & Audretsch, D. (1999). Innovation in cities: science-based diversity, specialization and localized competition, *European Economic Review*, 43, 409–29.

Flanagan, K., Uyarra, E. & Laranja, M. (2011). Reconceptualising the ‘policy mix’ for innovation, *Research Policy* 40 (2011) pp. 702-713.

Florida, R. (1999). The Role of the University: Leveraging Talent, Not Technology, *Issues in Science and Technology*, Volume XV (4), pp. 67-73.

Florida, R., Adler, P. & Mellander, C. (2016). The city as innovation machine, Working Paper Series Martin Prosperity Research, REF. 2016-MPIWP-002, July 2016.

Foray, D., Lundvall B-Å, (1996). The Knowledge-Based Economy: From the Economics of Knowledge to the Learning Economy, Employment and Growth in the Knowledge-Based Economy, OECD document, Paris: OECD.

Frasca, A. & Morone, P. (2007). Innovazione, network di imprese e conoscenza: quale ruolo per la geographical proximity?, Quaderno n. 4/2007 Dipartimento di Scienze Economiche, Matematiche e Statistiche Università degli Studi di Foggia.

Freeman, C. (1987). *Technology and Economic Performance: Lessons from Japan*. Pinter: London.

Freeman, C. (1995). The National System of Innovation in Historical Perspective, *Cambridge Journal of Economics*, 19, 5-24.

Freeman, C. (1991). Networks of Innovators: a Synthesis of Research Issues, *Research Policy* 20, 499–514.

Freeman, R. E. (1994). The Politics of Stakeholder Theory: Some Future Directions, *Business Ethics Quarterly*, 4(4), 409-421.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L. & de Colle, S. (2010). *Stakeholder Theory: The State of the Art*, Cambridge University Press.

Fritsch, M., & Slavtchev, V. (2007). Universities and innovation, *Space. Industry and Innovation*, 14(2), 201-218.

Fujita, M., Krugman P. & A.J. Venables (1999). *The Spatial Economy*. MIT Press.

Gertler, M. S. (2003). Tacit knowledge and the economic geography of context, or The undefinable tacitness of being (there). *Journal of Economic Geography*, 3:1, 75–99.

Gibbons, M. (2013) Mode 1, Mode 2, and innovation, in E. Carayannis (Ed.) “Encyclopedia of Creativity, Invention, Innovation and Entrepreneurship”, Berlin: Springer, 1285–1292

Glaeser E. L., Kallal H.D., Scheinkman J.A. & Shleifer A. (1992). Growth in Cities. *The Journal of Political Economy*, 100 (6), Centennial Issue, 1126-1152.

Goddard, J. (2009). *Reinventing the Civic University*, London: NESTA.

Goddard, J. & Chatterton, P. (1999). Regional Development Agencies and the Knowledge Economy: Harnessing the Potential of Universities, *Environment and Planning C*, 17 (6), 685–699.

Goddard, J. & Kempton, L. (2016). *The Civic University*. Universities in leadership and management of place. Newcastle University, Centre for Urban and Regional Development Studies, RR2016/01.

Goddard, J. & Tewdwr-Jones, M. (2015). *City Futures and the Civic University*, New Castle City Futures.

Goddard, J. & Vallance, P. (2013). *The University and the City*, Abingdon: Routledge.

Goddard, J., Kempton, L., Vallance, P. (2013) The civic university: Connecting the global and the local, in: R. Cappello, A. Olechnicka & G. Gorzelak (Eds) “Universities, Cities and Regions, Loci for Knowledge and Innovation Creation”, London: Routledge, 43–63.

Goddard, J, Kempton, L and Vallance, P. (2014) Universities as anchor institutions in cities in a turbulent environment: vulnerable institutions in vulnerable places. *Cambridge Journal of Regions Economy and Society*, 7(2), 307-302.

Grau, F-X. (2015). *The Glocal University. Global University Network for Innovation (GUNI)*, Barcelona, retrieved from: <http://www.guninetwork.org/articles/glocal-university>.

Gust-Bardon, N.I. (2012). *The Role of Geographical Proximity in Innovation: Do Regional and Local Levels Really Matter?*, Fraunhofer Institute for Systems and Innovation Research ISI, Working Papers Firms and Region No. R4/2012

Helpman, E. (2004). *The Mystery of Economic Growth*, Cambridge, MA.

Hlady-Rispal, M. & Jouison-Laffitte, E. (2014). Qualitative Research Methods and Epistemological Frameworks: A Review of Publication Trends in Entrepreneurship, *Journal of Small Business Management*. 52(4), 594–614.

Holland, B.A. (2001). Toward a Definition and Characterization of the Engaged University, *Metropolitan Universities* 2 (3), 20–29.

Holland, B.A., 2001, Toward a Definition and Characterization of the Engaged University, *Metropolitan Universities* 2 (3), 20–29.

Huggins, R. & Thompson, P. (2015), Entrepreneurship, innovation and regional growth: a network theory, *Small Business Economy* (2015) vol. 45, pp. 103-128

Huhtelin, M. & Nenonen, S. (2015) A Co-creation Centre for university–industry collaboration – a framework for concept development. *Procedia Economics and Finance* (21),137-145.

ISTAG (2011) *Orientation of EU ICT R&D and Innovation Beyond 2013*. Report of the Information Society Technology Advisory Group (ISTAG), Brussels, EC.

Kettunen, J. 2014 *The Stakeholder Map in Higher Education* PEDR. 2014. V 78. 7

King, N. (2004). Using templates in the thematic analysis of text. In Cassell, C. & Symon, G. (Eds.). *Essential guide to qualitative methods in organizational research* (256–270). London, UK: Sage.

Koskela-Huotari, K., Edvardsson, B., Jonas, J. M., Sörhammar, D. & Witell, L. (2016). Innovation in service ecosystems. Breaking, making, and maintaining institutionalized rules of resource integration, *Journal of Business Research* 69, 2964-2971

Kuhn, T.S. (1962). *The structure of scientific revolutions: International encyclopedia of unified science, Volumes I and II, Foundations of the unity of science*. Chicago: University of Chicago Press.

Lawton Smith, H. (2007), Universities, innovation, and territorial development: a review of the evidence, *Environment and Planning C: Government and Policy*, Vol 25, 98–114.

Lawton Smith, H., Glasson J., Romeo, S., Waters, R., & Chadwick, A. (2013), 'Entrepreneurial regions: evidence from Oxfordshire and Cambridgeshire', *Social Science Information*, Vol 52, No 4, 653–673.

Lendel, I. (2010). The impact of research universities on regional economies: The concept of university products. *Economic Development Quarterly*, 24(3), 210–230.

Leydesdorff, L. (2012), The Triple Helix, Quadruple Helix,..., and an N-Tuple of Helices: Explanatory Models for Analyzing the Knowledge-Based Economy? *J Knowl Econ* (2012) 3: 25, 25–35.

Leydesdorff, L. & Etzkowitz, H. (1998), The Triple Helix as a Model for Innovation Studies, *Science and Public Policy*, 25 (3), 195–203.

Lundvall, B-Å & Foray D. (1996). The Knowledge-Based Economy: From the Economics of Knowledge to the Learning Economy. In *Employment and Growth in the Knowledge-Based Economy*. OECD document, Paris: OECD

Lundvall, B-Å & Johnson, B. (1994). The learning economy. *Journal of Industry Studies*, 1, 23–42.

Lundvall, B-Å, (1992). Introduction, in B. Lundvall (ed.), *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*, London: Pinter.

Lundvall, B-Å. (2007). National Innovation Systems. Analytical Concept and Development Tool, *Industry and Innovation*, 14:1, 95-119

Lundvall, B-Å. (1992). Introduction, in Lundvall, B-Å. (Ed.), "National Systems of Innovation : Towards a Theory of Innovation and Interactive Learning", Pinter Publishers: London, 1-19.

Lundvall, B-Å. (2007). National Innovation Systems—Analytical Concept and Development Tool *Industry and Innovation*, 14:1, 95-119.

Maillat D. (1995) Territorial dynamics, innovative milieus and regional policy, *Entrepreneurship and Regional Development* 4, 1–20.

Maillat D., Crevoisier O. & Lecoq B. (1994). Innovation, networks and territorial dynamic: A tentative typology, in B.Johansson , C.Karlsson and L.Westin (eds.), *Patterns of a Network Economy*, Berlin, Springer Verlag, 33–52.

Maillat, D. (1991). The Innovation Process and the Role of the Milieu. In: E. Bergman, G. Maier & F. Toè Dtlng, eds., *Regions Reconsidered: Economic Networks, Innovation and Local Development in Industrialized Countries*, 103 - 117. London: Mansell.

Maillat, D. (1998), From the industrial district to the innovative milieu: Contribution to an analysis of territorialised productive organisations, in *Recherches Économiques de Louvain/ Louvain Economic Review*, Volume 64, Issue 1 (Space and economics in retrospect), 111-129

Maillat, D. & Kébir, L. (2001). The Learning Region and Territorial Production Systems, in Johansson, B., Karlsson, C., & Stough, R. R. (Eds.) (2001). "Theories of Endogenous Regional Growth", Springer: London.

Mascarenhas, C., Marques, C. S., Galvão, A. R. & Santos, G. (2017). Entrepreneurial university: towards a better understanding of past trends and future directions." *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 11 Issue: 03, pp.316-338"

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation* (2nd ed.). San Francisco, CA: Jossey-Bass.

Merton, R., Fiske, M., & Kendall, P. (1956). *The Focused Interview: A Manual of Problems and Procedures*. New York: Free Press.

Metcalf, S. (1995). The Economic Foundations of Technology Policy: Equilibrium and Evolutionary Perspectives, in P. Stoneman (Ed.), "Handbook of the Economics of Innovation and Technological Change", Blackwell Publishers: Oxford (UK)/Cambridge (US).

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book* (2nd ed.). Thousand Oaks, CA: Sage.

Miles, M. B., Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book*. (2nd ed.). Thousand Oaks, CA: Sage.

Mills, J. (2014). *Methodology and methods*. In Jane Mills & Melanie Birks (Eds.), *Qualitative methodology: A practical guide*. Thousand Oaks, CA: Sage.

Molas-Gallart, J. & Castro-Martínez, E. (2007). Ambiguity and conflict in the development of "Third Mission" indicators. *Research Evaluation*, 16(4), pp. 321-330.

Myers, M. D. (2013). *Qualitative research in business and management*. Thousand Oaks, CA: Sage Publications.

Mulgan, G. (2007). *Social innovation: What it is, Why it matters and How it can be accelerated*. Skoll Centre for Social Entrepreneurship Working Paper, Oxford Said Business School.

Nelson, R. (Ed.) (1993). *National Innovation Systems. A Comparative Analysis*. Oxford University Press: New York/Oxford.

Nonaka, I., Konno, N. (1998). The concept of "Ba": Building a Foundation for Knowledge Creation. *California Management Review*, 3, pp. 40-54

Nonaka, I., Toyama, R. & Konno, N. (2000). SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation. *Long Range Planning*, 33, pp. 5-34.

North, D. (1990). *Institutions, Institutional Change and Economic Performance*, Cambridge University Press: Cambridge.

Nowell, L. S., Norris, J. M., White, D. E. & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16:1, 1-13.

OECD (2017). Benchmarking higher education system performance: Conceptual framework and data, *Enhancing Higher Education System Performance*, OECD Paris, available at: <http://www.oecd.org/education/skills-beyond-school/Benchmarking%20Report.pdf>, pp. 21-24.

Oh, D.-S., Phillips, F., Park, S. & Lee, E. (2016). Innovation ecosystems: A critical examination. *Technovation* (54), 1- 6.

Patton, M. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Perkmann, M. et al. (2013). Academic engagement and commercialisation: A review of the literature on university–industry relations, *Research Policy* (42), 423-442

Perkmann, M., Neely, A. & Walsh, K. (2011). How should firms evaluate success in university–industry alliances? A performance measurement system. *R&D Management*, 41 (2), 202-216.

Phills Jr., J.A., Deiglmeier, K., Miller, D. T. (2008), *Rediscovering Social Innovation*, *Stanford Social Innovation Review*, 6 (4).

Polanyi, M. (1958). *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge.

Polanyi, M. (1966) *The Tacit Dimension*. The University of Chicago Press Ltd., Chicago and London, 6th edition (2009), p. 108.

Porter, M. E. (1996). Clusters and the new economics of competition. *Harvard Business Review*, November-December, 77-90.

Ratten, V. 2017 "Entrepreneurial universities: the role of communities, people and places. "Journal of Enterprising Communities: People and Places in the Global Economy, Vol. 11 Issue: 03, pp.310-315,"

Schilling, M. (2008), *Strategic Management of Technological Innovation*, New York: Mc Graw Hill.

Schilling, M., (2008). "Strategic Management of Technological Innovation", Mc Graw Hill: New York.

Schofield, T. (2013) Critical success factors for knowledge transfer collaborations between university and industry. *Journal of Research Administration* 44 (2), pp. 38-56

Schumpeter, J. A. (1939). "Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process", Vol. 1, Mc Graw- Hill: New York.

Sparrow, J. 2010 Assessing Changes in University Knowledge Transfer Capability to Support Innovation: A Knowledge Intensive Business Service Perspective. In: Howlett R.J. (eds) *Innovation through Knowledge Transfer 2010. Smart Innovation, Systems and Technologies*, vol 9. Springer, Berlin, Heidelberg, pp. 73-81.

Sparrow, J., Mooney, M. & Lancaster, N (2006) Perceptions of a UK university as a knowledge-intensive business service enhancing organisational and regional service innovation. *International Journal of Business Innovation and Research* 1.1/2, 191–203

Sparrow, J., Tarkowski, K., Lancaster, N., Mooney, M., 2009 Evolving knowledge integration and absorptive capacity perspectives upon university-industry interaction within a university *Education + Training*, Vol. 51 (8/9), 648-664.

Stake, R.E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

Sutz, J., 1997, The New Role of the University in the Productive Sector, in H. Etzkowitz and L. Leydesdorff (eds.), *Universities and the Global Knowledge Economy: A Triple Helix of University–Industry–Government Relations*, London and Washington: Pinter, 11–20.

Szerb, L., Acs, Z., Autio, E., Ortega-Argiles, R., Komlosi, E. et. al. (2013). REDI: The Regional Entrepreneurship and Development Index – Measuring regional entrepreneurship. Final Report. European Commission, Directorate-General for Regional and Urban policy. REGIO DG 02 – Communication.

Toedtling, F. & Tripl, M. (2005). One Size Fits All? Towards a Differentiated Regional Innovation Policy Approach, *Research Policy* 34(8):1203-1219

Tripl, M., Sinozic, T., & Lawton Smith, H. (2015). The role of universities in regional development: Conceptual models and policy institutions in the UK, Sweden and Austria. *European Planning Studies*, 23(9), 1722-1740.

Uyarra, E. (2010). Conceptualizing the regional roles of universities, implications and contradictions. *European Planning Studies*, 18(8), 1227–1246.

Vargo, S.L., Akaka, M.A. (2009). Service-dominant logic as a foundation for service science: Clarifications. *Service Sci.* 1(1):32–41.

Vargo, S.L., Akaka, M.A. (2012). Value Cocreation and Service Systems (Re)Formation: A Service Ecosystems View, *Service Science* 4(3), 207–217.

Vedung, E. (1998). Policy instruments: Typologies and theories. In Bemelmans, M.-L., Videc, R., Rist, C. and E. Vedung (Eds.), "Carrots, sticks, and sermons: Policy instruments and their evaluation", Transaction: New Brunswick (NJ), 21–58.

Wright, M. & Stigliani, I. (2012). Entrepreneurship and Growth. *International Small Business Journal*, 31(1), 3–22.

Yin, R. K. (2003) *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Yin, R.K. (2009). *Case Study Research. Design and Methods*. 4th ed., Thousand Oaks, CA: Sage.

Ylinenpää, H. (2001). Science Parks, Clusters and Regional Development. Luleå University of Technology AR 2001:48, Paper presented at 31st European Small Business Seminar in Dublin, Sept 12-14.

Zahra, S.A. & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension, *The Academy of Management Review*, Vol. 27, No. 2, 185-203.